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BULLETIN

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ETY OF HOSPITAL PHARMACO

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AS *The President* SEES IT

Vacations are over and the majority of us are back on the job better prepared to serve our hospital, society (the general public), and our SOCIETY. There have been many excellent opportunities for us to improve our service to the hospital, through attendance at Institutes, through local and national meetings with other hospital pharmacists, and through reading this BULLETIN and other journals covering the pharmaceutical and medical literature. Serving the hospital properly is our full time job, partly through which we are serving the general public. We find it not too difficult to further serve society, our neighbors and fellow men, through certain religious and social activities. Now, WHAT ABOUT SERVING OUR SOCIETY?

"MY WEEK HAS EIGHT DAYS"*

My wife, knowing that I am interested in time and motion studies and in time-saving devices, stated that the above titled article was required reading for me. Since Betty doesn't usually require such things of me, I thought the article important enough to peruse it. I hope the entire membership of the SOCIETY will donate ten minutes to read this article, for they will figure out how they can give possibly 24 hours a week of their own time to the SOCIETY.

The author, Mr. Earl Wilson, so arranges his week's work as to use completely the conventional seven day week, and finds the eighth day is added through time saved. The eighth day he calls Earlsday. I read the article twice and after checking over his calculations for saving 24 hours per week, I believe I, too, have an eight day week and call my eighth day, Flacksday. To the too many persons who feel that they have not the time to indulge in SOCIETY activities, I recommend the reading of this article with the hope that maybe it will result in adding at least 4 and preferably more hours to your week. Then I hope you will use these hours for SOCIETY activities.

You say you are not a member of any SOCIETY committee and thus have no particular responsibility to the SOCIETY, to OUR SOCIETY? Please look at my first column as President, under Membership, and you will note that I charged EVERY MEMBER with the responsibility of assisting with the membership campaign on a local level, on a "more-or-less" personal basis. We MUST increase our membership and we need your cooperation.

THE PRESIDENT ELECT

In another section of THE BULLETIN is an announcement of the SOCIETY'S election results. Mr. I. Thomas Reamer is the President-elect. As one of the founders of the SOCIETY, an early contributor to the hospital pharmacy literature, and for other reasons, Mr. Reamer is well prepared to take over this job. In fact, he will turn out to be a much more able commander for our forces than I. I offer my sincere congratulations to Mr. Reamer and to his teammates, Sister M. Jeanette (Treasurer), Grover Bowles (Vice President), and of course to Miss Gloria Niemeyer (our Secretary). To this, the basic team for next year, I would like to offer my assistance, but I must request now that for the year following April 1950, I be given a chance to enjoy the Philadelphia Story - my family, my home, and my hospital pharmacy.

Just a note to the President-elect, I would recommend that if you don't already enjoy having an eight day week, you plan now that you will need one beginning April 1950.

CHICAGO INSTITUTE ON HOSPITAL PHARMACY

With 123 students forming an enthusiastic audience, the FIFTH Institute was off to a good start. This Institute, the best attended of any institutes sponsored by the A.H.A. this year, was highlighted by such things as the "Coffee Hour" about 10 A.M. daily, and the "Coke Hour" about 3 P.M. daily. Of course there were formal lectures interspersed between the various informal discussion opportunities and thus it is difficult to determine whether more value was derived from the formal or informal discussions.

One thing is certain, counting the attendance at the two institutes sponsored by A.H.A. and one by

* An article by Earl Wilson. If possible, buy or borrow a copy of the October 1949 issue of Cosmopolitan, and read this article beginning on page 38.

C.H.A., all three held this summer, almost three hundred persons attended as students, not including faculty members. This is a sign of one of two things. Either hospital pharmacists enjoy the aspects of these educational programs, or else hospital pharmacists NEED the information presented thereat. I am certain these meetings are attended by a few for the enjoyment derived from association with several score hospital pharmacists for five days. I am more positive, however, that attendance in the majority of cases is prompted by the vast educational potentialities of these institutes. It's an encouraging sign of the times to note these educational programs being so well attended. It is also encouraging to note the serious attitude that many new members, a lot of them youngsters in our specialty, are taking toward doing their work in an efficient and professional manner. This infiltration of our ranks on the various local levels will do us much good. In fact, these youngsters will soon be pressing us oldsters to the point where we are going to have to modernize our thinking and change our ways or else give way to youth.

GROUP PHOTOGRAPHS FROM THE CHICAGO INSTITUTE

On page 251 you will note several photographs of the student body at the Chicago Institute. There are costs and directions for obtaining enlargements of these photos. The prices are the price from the local Kodak store where enlargements will be made. You may have a choice of sizes as indicated.

When I took the photos, many persons asked whether they could obtain copies. It is possible that time has changed the desire for a group photo of the student body, but if not, here's your chance.

DRUG ADDICTION PROBLEMS

Doctor Harris Isbell, Director of Research, U. S. Public Health Service, Lexington, Ky., presented this subject at the Chicago Institute. To many, his presentation was the most interesting of the week. Doctor Isbell made everyone present very conscious of the addiction possibilities of narcotics and especially of barbiturates. His discussion will soon be published in the journal, Medical Clinics of North America, and possibly will be reprinted in this BULLETIN. Doctor Isbell gave one of the first showings of a movie made under his direction in which was depicted the life of a barbiturate addict, from very beginning to the end point (withdrawal of dosage and cure). This very human and alarming movie should provide, for those who have viewed it, the basis for maintaining strict control of narcotics and barbiturates (all so-called dangerous drugs). It shows what can happen to those whom you might "befriend" by being lax in controlling barbiturates. The opinion was expressed by many present, that if such a movie were shown to those unscrupulous persons presently selling barbiturates without a prescription, the dispensing by such means would cease at once.

For myself, I have incorporated the notes taken from his lecture, into the notes for our course in Pharmacology for student nurses. The comparison of narcotics that he presented will be used in the current issue of our Hospital Pharmacy News, in which we will encourage the use of Methadone in preference to Morphine. On publication of his article, we will abstract certain parts of it for our News Letter.

For the SOCIETY, I have requested that the SOCIETY be given high priority in the booking of Doctor Isbell's film, upon its release for distribution to the medical profession. As hospital pharmacists, we should assume the obligation to show this film to groups of students and staff nurses, physicians and medical students, and pharmacists, so that we will gain new respect for these drugs. Such viewings will facilitate our problem of controlling these drugs in the hospital.

MINIMUM STANDARDS

On October 1st, 1949, the Minimum Standards Committee met in the office of Chairman Purdum. The several problems involved in these standards were reviewed and from this meeting came the first set of standards that ever left committee with any semblance of meeting all possible criticisms, for this committee used as a basis, the comments and criticisms provided by the various chapters and total membership during this past year.

By the time you read this, the Standards should have been approved by the A.S.H.P. Executive Committee, by the Division of Hospital Pharmacy, and should be in process of review by either the A.M.A., A.H.A., or A.C.S. This is progress. The committee is to be complimented, and offered the sincere thanks of the SOCIETY.

PROPER USE OF A PHARMACIST'S TIME

Mr. Leroy Weidle, Sr., F.A.C.A. a faculty member of the Chicago Institute, described several time-saving devices used in his professional pharmacy. He presented many pertinent pointers for utilizing the pharmacist's time to best advantage. Probably the most important pointer had to do with his relegation of non-pharmaceutical duties to non-pharmacists. For example, several pharmacists compound the prescriptions, one non-pharmacist types all labels,

equipment used in compounding is placed in a specific area and at periodic intervals, the porter cleans this equipment. The pharmacist is not allowed to perform non-pharmaceutical duties and thus the personnel dollar is spent at the optimum.

I feel this is a time-saving concept which hospital pharmacists must accept and adopt at once, so that their full time may be spent in accomplishing the many pharmaceutical projects required of them, rather than being spent in non-pharmaceutical endeavors. Of course, this concept should be and is in many cases carried thru to the pre-packaging of stock by technicians, thus saving the pharmacist's time, and to other projects.

AFFILIATED CHAPTER MEETINGS

Before taking office, I thought it would be desirable for the President, during his term of office, to attempt to meet with the majority of affiliated chapters in an effort to provide liaison between the SOCIETY and its affiliated chapters. We sorely need such liaison but the finances of the SOCIETY are such that they do not permit such expenditures.

At one time I thought I had found a source of funds to provide such personal liaison, but it never materialized. Thus I hope that this column will provide information regarding SOCIETY needs and activities. I have also planned a monthly message to the several affiliated chapters and hope to use this as another means for keeping the membership informed as to progress of our SOCIETY.

The Ohio Society of Hospital Pharmacists had an interesting program in September in conjunction with the annual convention of the American Hospital Association. Mr. William Slabodnick is to be complimented for doing a good job in this respect.

The Southeastern Society of Hospital Pharmacists met in October in New Orleans. An educational and interesting program was planned by the Program Committee. Both of these groups are doing outstanding work in their respective regions.

We need more regional groups, meeting probably twice a year, in order to accomplish some of the future SOCIETY plans. I hope many of you will give consideration to this need and help in the formation of these needed regional chapters.

VIAL WASHER

At Jefferson we have long felt the need for a washing apparatus for vials used in the manufacture of small-volume parenterals. We have finally concluded plans for an apparatus that will provide a rack holding 50 vials. The vials will be inverted in this rack. The rack will fit over a base containing 50 washing tips. Various washing and rinsing solutions may be used. The rack will then be taken off the base, wrapped in paper or cloth, and dry heat sterilized. The rack will serve as storage unit for the sterile vials, as well as having served as a rack for cleansing the vials.

Orders for five such apparatuses are required before the contractor will begin work. Several persons at the Institute were interested in purchasing such an apparatus and it is thought that many others would be interested. Send a postal to me and I'll send you the blueprints and further details.

PATIENT DAY COSTS

How many of you know your cost of drugs per inpatient day? How many of you are interested in comparing costs, on basis of a standard formula? I feel we can learn much about our respective operations through comparison of patient day costs. Several persons at the recent Institute exhibited interest in this subject and presented cost figures.

Please send a postal to me if you have patient day costs or if you are interested in comparing same using a standard formula. I think we can all benefit from such a project.

Cordially,

Herbert S. Flack

THE BULLETIN is published bimonthly by the American Society of Hospital Pharmacists, a national organization devoted to the profession of hospital pharmacy, dedicated to the interests of the hospital pharmacist, and pledged to cooperate with the American Pharmaceutical Association with which it is affiliated.

Contributions of articles by hospital pharmacists, or by others interested in the progress of this important branch of the public health profession, will be accepted if they are of general interest to those in hospital pharmacy. The editors reserve the right to revise all material submitted, if necessary.

The American Society of Hospital Pharmacists and the American Pharmaceutical Association assume no responsibility for the statements and opinions advanced by contributors to THE BULLETIN. Views expressed in the editorials are those of the editor and do not necessarily represent the official position of the American Society of Hospital Pharmacists.

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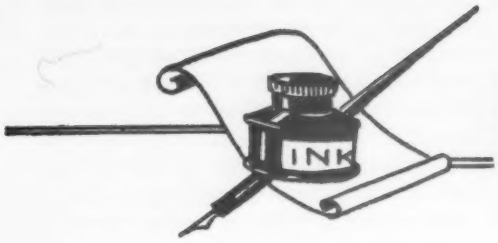


CORRESPONDENCE

Dear Sirs: I am sending an alternate to the method of making Anesthetic Lubricant as given in "Notes and Suggestions" in the July-August issue of THE BULLETIN. By this method the preparation can be made in about an hour which is considerably less time-consuming:

Nupercaine HCl	0.5 Gm.
Powd. Tragacanth	1.5 Gm.
Alcohol	5.0 cc.
Glycerin	20.0 cc.
Zephiran Conc. 12.8%	0.1 cc.
Dist. Water q.s.	100.0 cc.

Suspend the tragacanth in the alcohol in a capacious conical graduate and add to this suspension, very rapidly, the rest of the ingredients dissolved in 70 cc. of distilled water. Stir vigorously for several minutes, add the Zephiran concentrate and enough distilled water to make 100 cc., stir again and allow to stand for about an hour when swelling will be complete. The thickness of the product can be adjusted by varying the amount of tragacanth.

I might go on and explain that the rapidity with which this jelly forms is due to getting each particle of tragacanth separated by alcohol in which it is insoluble and when the water is added very rapidly it surrounds each particle of tragacanth and swelling is quickly completed whereas with tragacanth tears or adding water directly to tragacanth powder, the water surrounds a lump of tragacanth and it takes far longer for the water to penetrate and swell the lump.

This same method of making tragacanth jelly has many other applications such as blood cell paste, urea-jel, etc. The only trick is to first suspend the tragacanth in alcohol and add, you might say dump since it is done that rapidly, the rest of the ingredients. Sometimes it is advantageous to first make the jelly with water and then dissolve the active ingredients in the jelly as the published formula indicated.

With best wishes for the continued rise in prestige of our organization.

Harry W. Austin

French Hospital
San Luis Obispo, California

Dear Sirs: Mr. Walter F. Hitzelberger, President of the Southern California Chapter of the American Society of Hospital Pharmacists, of which I am an active member, requested that I write the enclosed item for THE BULLETIN. We all felt that other groups would be interested in knowing just how these "Workshop Meetings" are held, since they have proven to be highly attractive in this area.

At this time, I wish to say that Dr. Purdum and Mr. Goudy should be commended very highly on the way they conducted the Institute at Berkeley, California. Had I missed the Institute I would have been very sorry and would have felt that I had lost something extremely valuable.

Needless to say, I enjoy THE BULLETIN immensely and in my opinion it is the finest pharmaceutical publication to my knowledge.

Charles Hagan

Santa Monica Hospital
Santa Monica, California

Note: See page 256 for a discussion of the value of "Workshop Meetings"

Dear Sirs: We have noted on page 169 of the July-August, 1949 issue of THE BULLETIN of the American Society of Hospital Pharmacists a slight error regarding one of the drugs in which this department is interested, namely, l-Arterenol, written up in your article as nor-epinephrine.

The Department of Medical Research of Winthrop-Stearns, Inc. is conducting a clinical investigation of this drug under the trademark Levophen, brand of levo-arterenol bitartrate and supplies of this drug can be obtained by qualified investigators from this department upon the completion of the necessary legal requirements.

Thanking you in advance for your cooperation in this matter, we remain

A. Scribner, M. D.

Winthrop-Stearns, Inc.
New York City, N. Y.

EDITORIAL

Needed - A Standard Of Practice

Nothing retards the development of hospital pharmacy so much as the lack of common knowledge of what service should be reasonably expected from the Pharmacy. There are many pharmacists in all types and size institutions who have no standard of performance upon which they can build the pharmacy service. They do not know the possibilities of their departments and, as yet, they have no place to turn for this information.

This lack of basic knowledge has many ramifications which act to the detriment of hospital pharmacy and of those who are making it a career. It gives rise to vast differences in the quality and quantity of service performed in Pharmacy departments of hospitals of the same size and type. It results in large differences in salaries for pharmacists who should have essentially the same responsibilities and who should be in the same salary range. Such differences in remuneration, perpetuated by those not doing as good a job as may be reasonably expected, tend to hold down the salaries of those giving superior service.

What do hospital administrators, be they lay or medical men, expect of the Pharmacy? They expect good pharmacy service for the patient. But seldom are they in a position to judge what good service is. As wise administrators they assign the responsibility for supplying this service to the pharmacist. Thus, the responsibility for establishing a standard of performance falls back upon us.

Each member of our group, from those in the smallest to those in the largest hospitals, must have a clearly defined standard of service before the specialty of hospital pharmacy can rise to the heights to which it is capable.

This task of delineating and clarifying the service which may reasonably be expected from Pharmacy departments in hospitals of various sizes might be considered as an extension of the principles laid down in the Minimum Standards for Pharmacies in Hospitals. It may be thought of as the development of a standard practice manual for hospital pharmacy. Now when we speak of a standard practice manual, we hope it will not be inferred that we advocate the rigid standardization of all hospital pharmacies. We do not. We know that local conditions have a significant influence upon the practice of pharmacy in all hospitals. But we would hope that some basic standard level of service might be developed below which no Pharmacy should fall and above which most would rise.

As an approach to the development of this problem we suggest that the Division of Hospital Pharmacy make a detailed survey of representative hospitals of all sizes and types. This survey would have to be done in the field and should not be attempted by a questionnaire alone. Taking several representative pharmacies in each size range and type of hospital, an analysis should be completed of the job that is being done and a projection made as to the job which reasonably could be

expected. From these facts should be determined the personnel, the equipment and the space required to do the job as defined.

What is the job to be done? Under this heading several points could be considered which may be thought of as amplifications of the pharmacist's responsibilities as noted in the Minimum Standards. This detailed analysis of duties and responsibilities should crystallize a basic standard of performance for hospitals of various sizes and types. In other words, where the Minimum Standards are a statement of principles, the results of this study would emphasize the quantity or degree to which it is feasible to develop these responsibilities in hospitals of various sizes. Thus in considering the job to be done in a 150 bed general hospital with an outpatient service, some factors to be evaluated would be: Is it practical to prepare injectible medications in a hospital of this size? What are the determining factors? What would be the net savings? How much general manufacturing is it practical to undertake? How many inpatient and outpatient prescriptions is it reasonable to expect a pharmacist to fill per day? How much work is involved in purchasing supplies and preparing charges? What types of records should be kept to give the pharmacist and the administrator the facts they should know for planning? What type of stock control is best and how much time is involved? What teaching activities are to be carried out? What is the minimum time required for Pharmacy Committee activities? Some miscellaneous jobs to be planned for include the washing of bottles, receiving and putting away stock, recording changes in prices, the maintenance of orderliness and cleanliness of the department and so on. While it may appear unusual to consider some of these factors in a job analysis, still many of these things which are never planned for are those which are the most often neglected and result in an overburdening of the pharmacist with numerous details with which he should not be directly concerned after the planning stage.

The next step would be the determination of the personnel required to do the job. One pharmacist can do only so much. If he is to be assigned many responsibilities, he must have the work organized and be assigned auxiliary help to do the many things which can be done under his direction. If it has been found practical to engage in extensive manufacturing, then additional pharmaceutical personnel should be allotted who can, in turn, carry additional responsibilities.

When the personnel requirements are analyzed, it is very important to bear in mind that the chief pharmacist even in the smallest hospital has certain line functions in the organization which include planning, policy making and so on, in addition to the staff functions of his position which emphasize service to the patient and to the other departments. Failure to give the pharmacist sufficient personnel so that he has time free to devote to his line functions results in a stagnation of the development of his department.

It naturally follows that certain tools will be needed with which to work. These tools are equipment: manufacturing apparatus, prescription and manufacturing furniture, bookkeeping and accessory devises, libraries, mixing and storage tanks, dispensing equipment, files for literature, desks, storage facilities and so on. These can be selected judiciously only after one knows the work to be done.

Knowing the job, the personnel needed and the equipment required, then we are in a position to intelligently evaluate the amount and location of the space which should be devoted to the pharmacy.

Such a basic study in hospital pharmacy would assist immeasurably in raising the quality and quantity of pharmacy service and equalizing the basic salaries for pharmacists. It would also tend to establish as common knowledge the services which should be performed in the Pharmacy, as well as the elements required to render those services.

Don E. Francke, *Editor*

RESPONSIBILITY of the Hospital Pharmacist in PUBLIC HEALTH and PREVENTIVE MEDICINE

By Otis L. Anderson, M.D.*

Presented at the Institute on Hospital Pharmacy
Chicago, August 29, 1949

I should like to express my appreciation for the opportunity to participate in this, your Fifth Institute on Hospital Pharmacy.

It is a pleasure for me to bring to you the greetings of Dr. Leonard Scheele, the Surgeon General of the Public Health Service.

During the past five years, while directing the programs of the Public Health Service Marine Hospitals, I have increased my knowledge of the American Hospital Association, the American Pharmaceutical Association and the American Society of Hospital Pharmacists. I have interpreted the activities of your Associations as being laudably objective and purposeful in reaching out to develop firm policies in meeting the challenge of expanding programs in pharmacy. Your progress illustrates what can be done by a group sincere in its purpose.

This Institute is illustrative of the constructive results that have evolved from such association activities, and I am told, that to men such as Dr. Fischelis and Mr. Don Francke should go no small share of recognition for their untiring efforts and progressive contributions.

Through your Association activities and Institutes, much has been done to develop among administrators, physicians, nurses and other members of the hospital team, a more thorough understanding of what constitutes a good pharmaceutical service and the requirements of better patient care through the utilization of such service.

Your program committee requested that I speak to you on "The Responsibility of the Hospital Pharmacist in Public Health and Preventive Medicine".

* Assistant Surgeon General, Associate Chief, Bureau of Medical Services, Public Health Service, Washington, D. C.

Possibly it would be desirable to define what is meant by public health and preventive medicine. Dr. M. J. Rosenau, well known pioneer in public health, slightly more than ten years ago defined the terms in these words, "The purpose is to improve the physical well being of the general population. It aims at the promotion of health as well as the prevention of disease. It deals more particularly with mass phenomena of the community than with problems of the individual, despite the fact that public health is the sum total of individual health". He further stated that the hospital was the logical place to practice preventive medicine. However, he observed that in actual practice the hospital staff is so engrossed with diagnosis and treatment that there is little interest or time for prevention as such and therefore special organizations such as clinics or health centers were being established. Other authorities would separate public health and preventive medicine and describe the former as those activities that are undertaken for the prevention of disease and the promotion of health, and are carried out as a community responsibility to be executed by official departments of public health, by voluntary health promotion agencies, etc. To the latter, preventive medicine, is ascribed those activities that are the immediate responsibility of an individual for the prevention of disease and the protection and promotion of health for the individual and his family, to be carried out for the most part by the family physician.

It is obvious from the above definitions that there is no difference of purpose, but rather one of responsibility for carrying out these activities. I believe we may clarify our thinking and settle for a very simply stated portion of Professor C. E. A. Winslow's definition as follows: Public

health is the science and the art of preventing disease, prolonging life and promoting physical health and efficiency through organized community efforts.

The thoughts I shall express to you are the result of impressions gained through various assignments it has been my pleasure to have had in the Public Health Service during the past twenty years. They involved direct clinical care of patients, as well as administrative duties in immigration and foreign quarantine activities, venereal disease control, general public health and hospital programs. These programs have, in some instances, included pharmacy projects.

THE RESPONSIBILITY FOR ADEQUATE EDUCATIONAL STANDARDS

The profession of pharmacy is generally defined, we all know, as a science and an art. To the physician, pharmacy is a profession and as practiced in its many branches, is thought of as embracing the collection, preservation, analysis, standardization, compounding and dispensing of drugs and medicines and also includes the synthesis of medicinal chemicals and the preparation of biological and antibiotic products.

For the intelligent practice of pharmacy, therefore, a knowledge of the physical, chemical and biological sciences is essential.

Today, in 1949, whether we think in terms of the pharmacist in general practice in his community or whether we think of his colleague, the hospital pharmacist, spending his entire time in purely professional practice, we are all in agreement that both activities are recognized as vital public health functions. The practice of pharmacy like medicine, dentistry and nursing is regulated by law. In the United States, pharmacy's rapid development has kept pace with the progress in public health and has led to advances in pharmaceutical training. We are cognizant of the fact that as in the other health professions, the general pattern of the cultural and basic courses is becoming well fixed, and that pharmacy is not far behind in joining the ranks of the professions that demand of its practitioners more than the formal training of the four-year professional or technical school.

Current discussions and those engaged in long range planning have recognized the need for a period of pre-pharmacy education, an education that would include the basic scientific courses necessary to prepare one for a scientifically constructed pharmaceutical curriculum. In addition there would also be included a sufficient number of broadening cultural courses to enable the pharmacist to fully participate as a member of the public health team and to assume leadership in his area of specialized knowledge.

It is incumbent upon you as members of your profession to establish adequate education standards and to make certain that your profession guards well its portals of entry. Shortsighted interests should not prevent you from retaining your proper place in the health professions. To delay adopting the pattern necessary to properly prepare your successors in the practice of your professions a profession that has undergone considerable expansion and growth within the past decade, may well mean a loss of professional stature difficult to regain.

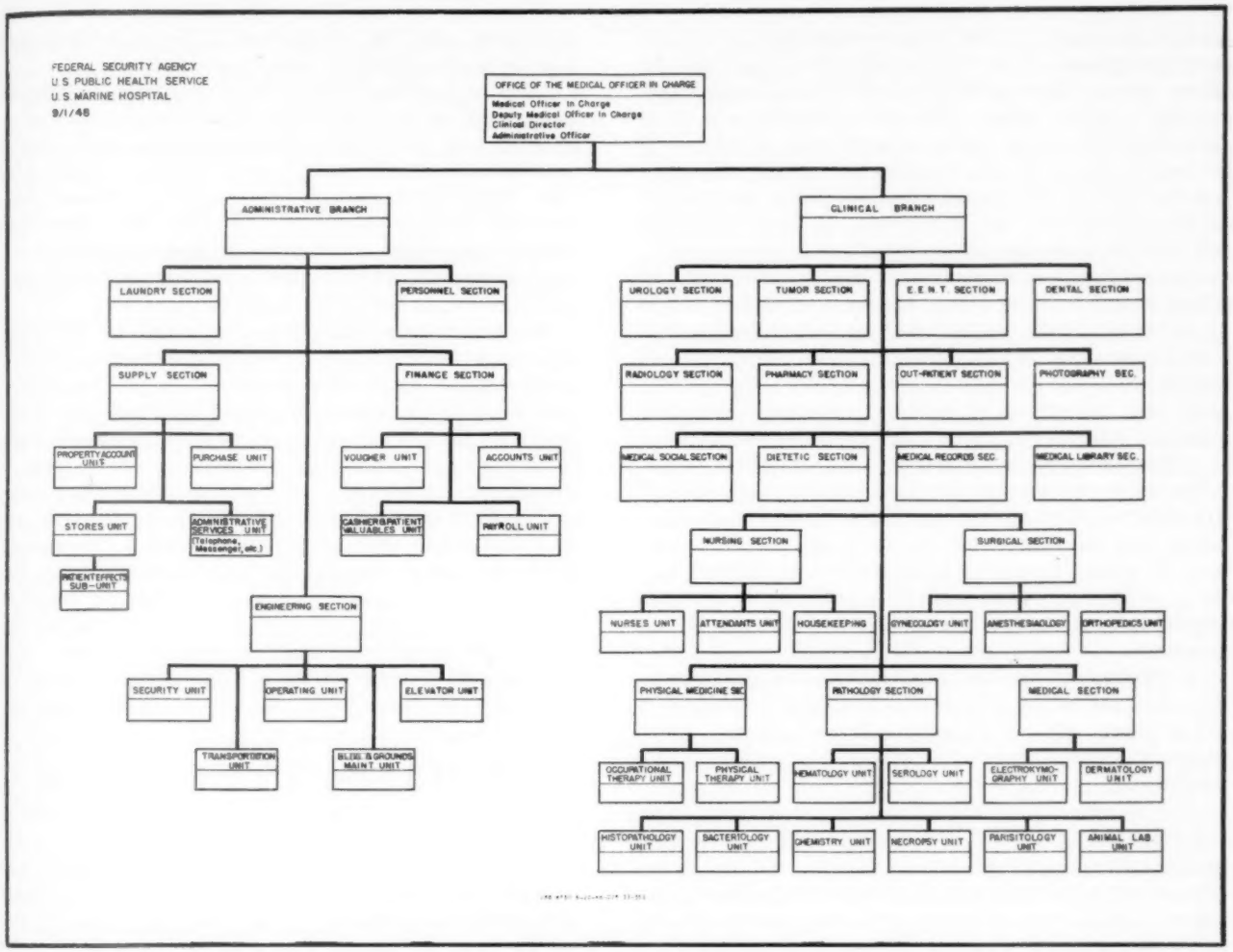
THE RESPONSIBILITY TO ACT AS A MEMBER OF THE TEAM

Basically, the modern hospital exists as a community enterprise and offers medical care beyond domiciliary or office facilities. We all generally understand that its main functions are to provide for: (1) the care of the sick and injured; (2) the education of physicians, dentists, pharmacists, nurses and others; (3) the prevention of disease and the promotion of health activities; (4) the advancement of research in scientific medicine.

It is a moot question whether the hospitals exist for the physician or the physician for the hospitals. In any event the hospital serves as the physician's workshop. He alone however, is unable to provide all the services the patients require or to approach fulfilling all of the functions of a modern hospital. The hospital program requires a variety of specialized talents. Some of us neglect to think of our activities as a part of a total hospital team. The pharmacist in charge of the pharmaceutical service must seriously consider his responsibility of providing a specialized service, assure a maximum contribution by following through, for his area is not limited to the confines of the four walls of the pharmacy itself, and to seek proper integration in the hospital program.

Dr. Fischelis, in his commencement address of last December, to the graduating classes in medicine, dentistry and pharmacy at the University of Tennessee, made a statement very much in point when he said, and I quote: "Today, there is not too much specialization, but too exclusive specialization. Medicine, dentistry, pharmacy, nursing, laboratory, x-ray technology and biological sciences are deeply interrelated and closely interwoven with public health. They cannot be practiced in air-tight compartments. Each must depend upon the other. All are members of the same team."

Heads of departments in hospitals must realize this interdependence. The pharmacist in charge should have an understanding of the fundamental principles and practices of hospital management



if he is to adequately advise the hospital administrator of the contributions the pharmaceutical service renders, and the requirements needed to render this service. He should be familiar with the overall operation of the clinical departments, the management departments, and their general functions.

Such texts as "Hospital Organization and Management" by MacEachern, "Legal Aspects of Hospital Practices" by Hayt and Hayt and "The Hospital in Modern Society" by Bachmeyer, are excellent source material on hospital administration and should be included in the hospital pharmacist's library together with his U.S.P. and N.F., Dispensatory and Journals.

We have for distribution this morning, copies of the organization chart as used by the Public Health Service for its general hospitals. This chart illustrates the organizational structure in our hospitals. You will note that the pharmacy section, along with the other professional sections, reports to the clinical director, while the management services report to an executive officer experienced in the field of business administration. (See chart above)

THE RESPONSIBILITY TO PROMOTE HEALTH EDUCATION PROGRAMS

In considering health education several thoughts run through my mind. What is meant by public health education and upon what is it based? Why is it considered urgent and necessary? How is such a program carried out and by whom?

I believe we may consider health education fundamental to what we understand public health to involve, as previously defined by Professor Winslow for us. In dealing with the prevention of disease, prolonging life and promoting physical health and efficiency we are concerned first with the control of diseases, their cause, effect and cure. Obviously then scientific investigations and demonstrations underlie sound health administration and serve as the basis or guide for health education. A knowledge of the cause of the disease enhances the opportunity of prevention. Similarly, the ef-

fect of disease and the facts known about its cure may minimize or arrest its further progress. In other cases, damage to the human body may have ensued and the future life and usefulness of such an individual rests upon a knowledge of how well he learns to live with his disease or its ravages. It is the widespread dissemination of this knowledge to the public through a variety of media that we understand to mean public health education.

The urgency and need for health education is allied with the accumulated and ever widening scope of scientific information and the usefulness this knowledge can serve through prevention of ill health, and the preservation of life. The public must be informed if it is to receive individual benefits and to support public programs designed to improve community and national health.

We have witnessed the community health benefits obtained through the purification of water supplies, the sanitary control of milk, the elimination of many diseases transmitted by insect vectors, and the immunization programs against smallpox, typhoid fever, diphtheria and many other diseases.

A review of the ten leading causes of death today reveals heart disease in first place, cancer in third place, etc. Application of present day knowledge would do much to reduce the present high death rate.

The large measure of success accomplished through public health in the past years have been achieved by mass methods of attack. Yellow fever was eradicated through a broad control program which eliminated the mosquito responsible for its transmission, and typhoid fever almost obliterated through state-wide sanitary control measures. We are now facing an era when the diseases of adult life must be seriously thought of in a comprehensive health program. Life expectancy has been considerably lengthened and consequently a large fraction of our population is surviving to the latter decades. In 1900 tuberculosis and pneumonia were leading causes of death. Today it is heart disease, cerebral hemorrhage and cancer.

A public health education program is carried out through the usual media we are familiar with, such as the radio, newspapers, bulletins, exhibits, motion pictures, feature campaigns, etc. The program is usually carried on through resources available in the local community, augmented at times by State and National organizations and/or governmental bodies.

I urge you and all the practicing pharmacists in this country to continue your interest in contributing personally and facilitating the dissemination of health information.

The cooperative feature campaign during National Pharmacy Week in 1948 and 1949 sponsored jointly by the American Pharmaceutical Association and the American Cancer Society was a most commendable contribution.

The year round educational program on cancer sponsored by the American Pharmaceutical Association and the Public Health Service served as a continual reminder to "think of cancer" when certain persistent symptoms manifest themselves, and the further reminder to "see your physician early" since that is when treatment is most effective. I understand that similar programs are projected soon in the field of heart disease.

It appears to me that the pharmacists of America are in a most strategic position to make a major contribution to public health through the widespread dissemination of scientific medical information. Drug stores are natural public health information centers for their communities. I understand that in 8,000 communities a single drug store is the only source of drugs and medical supplies, and that every day, in excess of 10 million people visit the nation's drug stores. Most certainly the pharmacists of America are in a strategic position and I am sure they will continue to lend their support to the advancement of the nation's health. You, as leaders in your profession, are expected to be the leaders in advancing this educational program.

THF RESPONSIBILITY FOR OPERATING A "TOTAL" PHARMACEUTICAL SERVICE

A fourth responsibility that I would mention is one that sums up the many specific responsibilities of the hospital pharmacist per se. Responsibilities which your Society has so capably set forth in detail under Section V, of "The Minimum Standards for Pharmacies in Hospitals". I refer to that responsibility of operating a pharmaceutical service in the modern hospital.

Through college training and experience, you have prepared yourselves to be hospital pharmacists, specialists within the field of pharmacy. As I see it, you are skilled in the preparation, compounding, distribution and dispensing of drugs and medicines, including narcotics, hypnotics, poisons and antibiotics; you have equipped yourselves in many instances with the "know how" of large scale production. You are authorities to whom other members of the hospital team turn for information on hospital supplies, insecticides, fungicides, analytical tests, and current drug therapy information.

My opinion concerning the operation of an efficient pharmaceutical service in a modern hospital, is well set forth in the working policies of the Division of Hospitals Pharmacy Section of the Service wherein is stated "The pharmacy service has set its sights beyond the operation of an efficient hospital pharmacy. The pharmacist has a responsi-

bility for staff meeting contributions as a regular part of scientific presentations and discussions. The pharmacist is not expected to confine himself or his services to the pharmacy, but to participate to the fullest extent possible in the whole program of the hospital.

THE RESPONSIBILITY FOR GROWTH AND DEVELOPMENT OF HOSPITAL PHARMACY INTERNSHIP PROGRAMS

It is well known, that until recent years a pharmaceutical service, as such, was unheard of in many hospitals. What hospital pharmacy or "drug room activity" there was existed more or less by sufferance. Hospital administrators paid little or no attention to pharmaceutical service or to the lack of it. Nurses, orderlies and unskilled workers performed the so-called "bottle filling duties". Unfortunate incidents, sometimes involving deaths and economic waste that resulted from such a short-sighted policy, is testimony to this error of judgment.

Today, the trend is away from the old concept of "drug rooms" with poorly trained pharmacists or no pharmacists in attendance. Pharmacy is now assuming its responsibilities together with the other professions represented on the hospital team. Alert hospital administrators are aware of the value of a pharmaceutical service, operated by well qualified hospital pharmacists, individuals well trained in such fields as biochemistry, pharmacology, bacteriology, pharmaceutical administration and pharmacy. I wish, therefore, to point out a fifth responsibility, a responsibility that is yours, of providing an improved pharmaceutical service to the hospitals of today and tomorrow.

The increase in the number of new hospitals constructed and proposed will require the training of more pharmacists in hospital pharmacy. To meet this need, your Society and you must take action to insure a continuing supply of competent specialists. Training programs, such as the internship programs at Johns Hopkins, the University of Michigan and elsewhere must be continued and enlarged, and additional programs developed. Plans are presently being developed for a one year pharmacy internship in Public Health Service Hospitals.

THE RESPONSIBILITY TO FURNISH ADMINISTRATIVE STATISTICS ON HOSPITAL PHARMACY AND DRUG COSTS

The sixth and last responsibility that I would speak of today is your responsibility as a hospital pharmacy manager. Your profession is necessarily one that involves a rather large expenditure of funds for expendable items, drugs and medications. Costs cannot be ignored in any economy. This is especially true in the operation of hospitals which are subsidized to a great extent by public funds. I urge you to take an active interest in the business side of running a hospital and its pharmacy. The criterion of a good pharmaceutical service is one that functions not only well professionally, but also administratively. Hospital administrators require data for budget planning and your cooperation in developing systems and controls to determine drug costs and utilization will be most helpful. Items, such as total drug inventory value, inventory per active bed, drug costs per inpatient day, drug costs per outpatient visit, antibiotic costs, special study costs such as vitamin therapy, medication costs per type of confinement or illness and pharmacy personnel work loads are important.

SUMMARY

I trust your profession will soon determine upon adequate education standards. In my remarks I have related the standards proposed for the profession of pharmacy to the other health professions.

The contribution a hospital may make to the community can only be as satisfactory as the competence of the responsible members of its staff, properly coordinated, each member recognizing his responsibility as a member of a team.

Health education as a means of achieving an enlightened public understanding of scientific medical knowledge is important to the masses of our population, and to the individual. The hospital pharmacist occupies a strategic position in lending his support to health education programs.

The pharmacist responsible for a hospital pharmaceutical service not only has the opportunity of developing an efficient service but has a responsibility for contributing the specialized knowledge that is his, to staff discussions, conferences and hospital problems in which he may be of assistance.

The development of more and adequate hospital pharmacy internships is necessary to furnish trained pharmacists for our future hospitals.

As a member of the hospital staff the pharmacist must recognize his responsibility in furnishing administrative statistics.

Let us, in the health professions, ever be mindful of our mission in life--to forward the purpose of prevention of disease, to assist in prolonging life and the maintenance of good health.

REORGANIZING the Hospital Pharmacy

By Walter Frazier, Chief Pharmacist

Springfield City Hospital

Springfield, Ohio

AN ACCOUNT OF SOME OF THE ESSENTIAL STEPS A DEPARTMENT HEAD MUST INITIATE TO IMPROVE PHARMACY SERVICE IN A GENERAL HOSPITAL.

To activate and reconstruct a hospital pharmacy department may require more discriminating judgement and thoughtful planning than would be necessary to design a pharmacy and initiate service in a new hospital. It is advisable to retain and make full use of existing fixtures, equipment and methods which are satisfactory or adequate. Limitations of working space and storage, which are usually present, must be overcome somehow. Each change in administrative procedure which involves another department of the hospital network should be fully justified in the opinion of the head of that department and the executive director. It is essential to establish the priority of the various projects deemed important to the attainment of the maximum hospital pharmacy service and the rational reduction of cost of operation. Such plans and improvements must be accomplished without impairment of daily service.

The expansion of services at Springfield City Hospital during the past three years and the increased number of patients, added personnel and the enlarged medical staff, have combined to exert a major influence on our plans. The hospital has 270 beds plus 50 bassinets and serves an area with a population of 135,000. Last year's records reveal 10,000 adult patient days and 1,000 outpatient visits. Indigent cases make up 10 per cent of those admitted.

Originally the pharmacy consisted of one first floor room 22 ft. x 16 ft. with a basement storage room 18 ft. x 15 ft. This was designed as part of the hospital built in 1931. Our program began two and a half years ago with the addition of the adjoining room 16 ft. x 10 ft. which had formerly been used part-time by the outpatient clinic. This gives us a total of 782 square feet. An associate pharmacist and a secretary were added to the staff which previously consisted of one pharmacist and two technician-clerks. Pharmacy service hours were extended from 44 to 56 hours per week to cover noon hour, Saturday afternoon and Sunday morning. Soon the dilution of parenteral antibiotics was routinely performed in the pharmacy and at this stage the savings realized by the hospital had already justified our increased payroll.

Next a list of ward stock drugs was compiled and a mimeographed copy was

SPRINGFIELD CITY HOSPITAL
SPRINGFIELD, OHIO

PHARMACY REQUISITION

Dept..... By..... Date.....

No.	Amount		✓	
	30	Chloroform		ANESTHETICS
	120	Ether		
	480	Ether		
	100	Ethyl Chloride		
	30	Pontocaine Sol. 2% Topical		
	25	Vinethene		
	30	Acid Hydrochloric Dil.		LIQUIDS ORAL
	180	Aluminum Hydroxide Gel.		
	60	Ammonium Chlor. Syr.		
	30	Aromatic Spts. Ammonia		
	30	Belladonna Tincture		
	240	Castor Oil		
	30	Camph. Tr. Opium (Paregoric)		
	60	Chloral Hydrate Sol.		
	60	Hydriodic Acid Syrup		
	30	Hyoscyamus Tincture		
	60	I, Q, & S. Elixir		
	30	Lugols Solution		
	500	Milk of Magnesia		
	500	Mineral Oil		
	120	Paraldehyde		
	15	Peppermint Spt.		
	300	Petrolatum Emuls. c Cascara		
	300	Petrolatum Emuls. c Phenolph.		
	300	Petrolatum Emuls. Plain		
	120	Phenobarbital Elix.		
	15	Potassium Iodide Sol. 100%		
	120	Sodium Bromide Elix. N. F.		
	60	Sodium Bromide Sol. 25%		
	240	Sodium Phosphate Sol. N. F.		
	120	Turpin Hydrate Elix. Plain		
	120	Air Deodorizer		
	240	Benzine		
	60	Collodion F		
	4800	Instrume		
	4800	Saponar		
	4800	Sapon		
	4800	Spe		
	4800	T		
	240			

No.	Amount		✓	
	500	Acriflavine Sol. 1:10,000		LIQUIDS TOPICAL
	500	Alcohol Medicated 70%		
	4000	Back Lotion		
	4000	Benzalkonium Sol. 1:1000		
	4000	Benzalkonium Sol. 1:10,000		
	500	Benzalkonium Chl. Tr. 1:1000		
	30	Benzoin Comp. Tr.		
	30	Boric Acid Sol. 2%		
		Calamine Lotion		
		Camphor. Spt.		
		Dakins Solution		
		Distilled Water (Surgical)		
		Epinephrin Top. 1:1000		
		Hand Lotion		
		Hydrogen Peroxide Sol.		
		Iodine Tr. 2% U.S.P.		
		Isopropyl Alcohol 50%		
		Isopropyl Alcohol 50%		
		Magnesium Sulf. Sol. F		
		Merthiolate Tr. 1:		
		Mouth Lotion		
		Neocala		
		Pro		
		F		

Sample Page of Pharmacy Requisition

PREPARATION	COST	UNIT	SELL
Ampul 100 mg.	0.12	1	0.25
Ampul 500 mg.	0.24	1	0.50
Tablets 100 mg.	0.15	12	0.35

ASCORBIC ACID (VITAMIN C, CEVITAMIC ACID)

Example of Kardex Price List with Material Cost for each item and Selling Price.

CENTRAL NERVOUS SYSTEM DEPRESSANTS

ANALGETIC-NARCOTICS.

CODEINE PHOSPHATE U.S.P. Official Adult Dose 32 mg. (½ gr.)
Tablets Aspirin Compound with Codeine 32 mg. (½ gr.)

DIHYDROMORPHINONE HCL (Dilaudid) U.S.P.
H.T. Dilaudid 4 mg. (1/16 gr.)
H.T. Dilaudid 3 mg. (1/20 gr.)
H.T. Dilaudid 2 mg. (1/32 gr.)

MERPERIDINE HCL N.N.R. (Demerol HCl, Isonipecaine)
Ampuls 100 mg./2 cc.
Tablets 50 mg.

METHADON N.N.R. (Amidone, Adanon, Dolophine)
Ampuls Methadon 10 mg./2 cc.
Sterile Solution Methadon 10 mg./1 cc. (20 cc. Vials)
Syrup Methadon 10 mg./30 cc.
Tablets Oral Methadon 2.5 mg.
Tablets Oral Methadon 5.0 mg.
Tablets Oral Methadon 7.5 mg.
Tablets Oral Methadon 10.0 mg.

METOPON (Methyl-dihydromorphinone HCl)
Capsules Metopon 3 mg.

MORPHINE SULFATE U.S.P. Official Adult Dose 11 mg. (1/6 gr.)

ANALGETIC-ANTIPYRETICS.

ACETYLSALICYLIC ACID (ASPIRIN) U.S.P.
Tablets Aspirin 0.32 Gm. (5 gr.)
Tablets Aspirin 0.065 Gm. (1 gr.)
Tablets Aspirin Compound
Aspirin 3-½ gr.
Acetophenetidin 2-½ gr.
Caffeine ½ gr.

ACETOPHENETIDIN (Phenacetin) U.S.P.
Tablets Phenacetin 0.32 Gm. (5 gr.)

SODIUM SALICYLATE
Ampuls Sodium Salicylate 1.0 Gm./10 cc.
Ampuls Sodium Salicylate 1.0 Gm., Sodium Iodide 1.0 Gm. in 20 cc.
Ampuls Sodium Salicylate 1.0 Gm., Sodium Iodide 1.0 Gm. with Colchicine 0.65 mg. in 20 cc.
Tablets Sodium Salicylate 0.32 Gm. (5 gr.)
Tablets Sodium Salicylate 0.32 Gm. (5 gr.) Enteric Coated

supplied to each nursing station with the stipulation that all other drugs would require prescription form order. It was then time to obtain printed labels and prepackage ward stock supplies. A pharmacy pickup and delivery schedule was adopted for nursing stations and a work schedule for each pharmacy employee was established.

In order to extend friendly professional relations with the medical staff we undertook the publication of a monthly Springfield City Hospital PHARMACY NEWS LETTER. This gave us the opportunity to introduce our services, explain our procedures, and express our views. The NEWS LETTER also includes summarized information about some of our own products, and new useful commerical products of general interest, that are available.

Gradually we were able to add to the list of products which we manufacture and, of necessity, we slowly added to our equipment. We found a monel metal table top that was not being used in another department and designed a work cabinet to fit underneath it. At the same time we remodeled a wall cabinet and changed its location so that both sides could be used. We traded a small porcelain sink to another department for a large monel metal table sink. This helped considerably in designing and acquiring our next adjoining room which was to house our manufacturing department and new water still. Fortunately we already had the privilege of using an autoclave which was just across the hall from the new room.

The following is a list of the equipment we have acquired in the development period to date:

- Luer syringes with two-way valve for penicillin dilution (3)
- Pump for fifty gallon drums (3)
- Assorted laboratory glassware
- Assorted laboratory utensils
- Filter rack (designed for 5 gallon bottles)
- Bottle rinser for hot tap water
- Aluminum double boiler (2000 cc.)
- Numbering stamps for Prescription (2)
- Typewriter (we now have 2)
- Label cabinet and printed labels
- Label moistener
- Laboratory work cabinet (designed)
- Extra shelves for refrigerator
- Electric drying and sterilizing oven

Chief Pharmacist

1. Employs and supervises Pharmacy personnel.
2. Executes all administrative procedures, such as monthly and yearly reports and policies regarding interdepartmental relationships.
3. Purchases drugs, supplies, and equipment for the department.
4. Interviews medical service representatives of pharmaceutical companies.
5. Edits Pharmacy News and Formulary.
6. Serves as Secretary of the Pharmacy Committee and works with it on problems involved.
7. Dispenses and maintains a perpetual inventory of narcotics and alcohol.
8. Checks each drug order for nursing stations and other departments.
9. Initiates recommendations regarding pharmacy development to the administration.
10. Dispenses prescriptions.

Secretary

1. 8:00 to 9:00 A.M.
   a. Types heading on barbiturate record sheets for replacement to nursing stations.
   b. Prepares patient drug charges from prescriptions and floor dockets (antibiotics) and sends them to the cashier.
2. 10:00 to 11:00 A.M.
   a. Files prescriptions.
   b. Credits patient's account for returned prescriptions when the value is over 50 cents.
   c. Bills special narcotic charges from nursing record cards.
3. 11:00 to 11:30 A.M.
   a. Types new cards for narcotic stock replacements and lists items on receipt slip for nursing stations.
4. Answers all telephone calls.
5. Checks completeness of pharmacy charges on any account when cashier calls at time of patient's discharge.
6. Tabulates material costs of all drugs dispensed on prescription and those dispensed to other departments.
7. Prepares monthly financial report for the Administrator and for the Accounting Department.
8. Maintains daily inventory of narcotics.

WORK SCHEDULES

Springfield City Hospital

Associate Pharmacist

1. Checks and controls all bulk supplies and raw materials used in compounding and manufacturing.
2. Prepares all stock preparations manufactured in the department.
3. Records all formulas used and maintains a record of all preparations manufactured.
4. Assumes responsibility for all equipment used in compounding and manufacturing.
5. Compounds all extemporaneous prescriptions.
6. Inspects drugs in nursing station cupboards.
7. Inspects and replenishes ophthalmic drug trays on nursing stations.
8. Directs the work of technician-clerk number 1.
9. Takes over all pharmacist's duties in the absence of the chief pharmacist.

Technician-Clerk I

1. Assists pharmacist in manufacturing and compounding.
2. Washes containers, utensils and equipment.
3. Sterilizes bottles and equipment under supervision.
4. Prepares simple solutions of 5 gallon stock under direct supervision of pharmacist.
5. Dilutes and labels all penicillin and streptomycin. (This takes one hour daily on three to four days a week).
6. Labels and date-stamps all sterile solution containers.
7. Receives and checks all purchase orders upon arrival.
8. Records received items in purchase file, noting source, amount and cost.
9. Maintains cleanliness of manufacturing room and basement storage room.

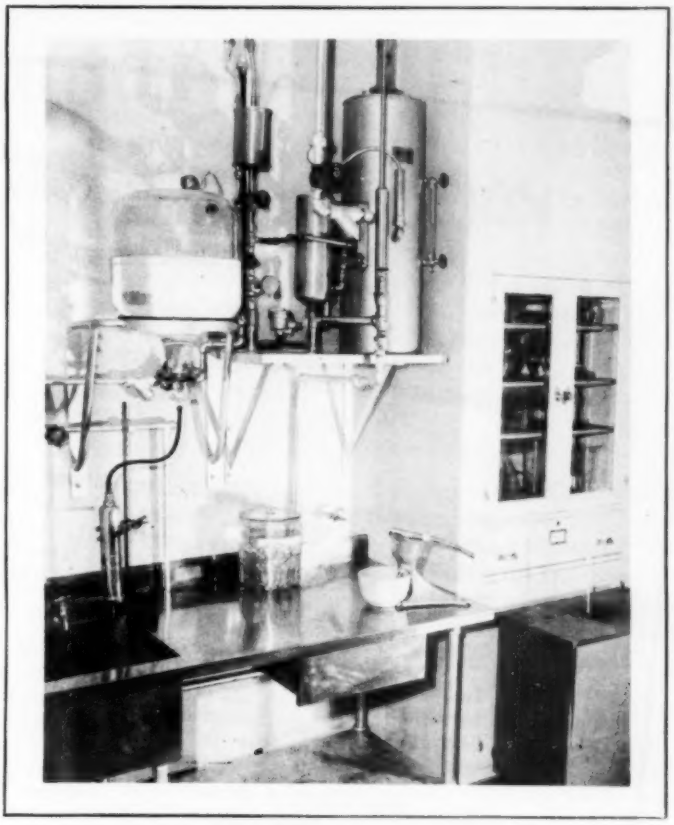
Technician-Clerk II

1. Picks up drug baskets from nursing stations at 8:00 A.M.
2. Fills ward stock prepackaged supplied on orders.
3. Delivers baskets containing ward drugs and prescriptions from 10:00 to 10:30.
4. Delivers additional prescriptions at 11:00 A.M. and picks up narcotic envelopes from nursing stations.
5. Delivers narcotic envelopes and additional prescriptions to nursing stations.
6. Files requisitions.
7. Lunch 12:00 M. to 1:00 P.M.
8. Refills ward stock containers under supervision of pharmacist.
9. Maintains cleanliness and order of dispensing room including stock, containers and utensils.
10. Delivers prescriptions at 2:00 P.M. and at 4:30 P.M.

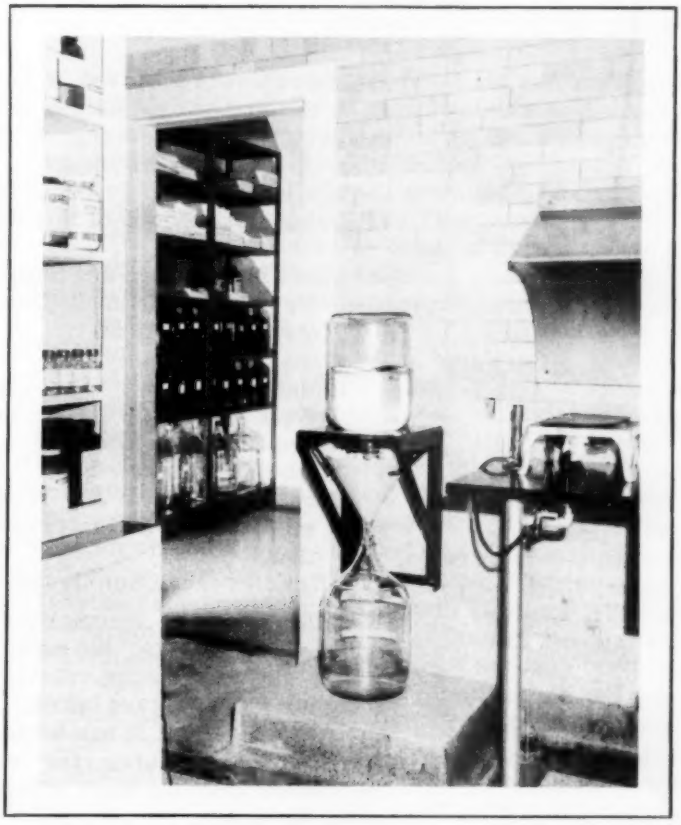
Filters (Mandler, Selas, Sintered Glass)
Suction pump
Clamp box for autoclave (designed)
Single still, 10 gallon per hour capacity including
  Conductivity meter
  Pyrex storage bottle
  Condensate feedback unit
Power-stir mixer with 2 propellers (12 inch shaft and 18 inch shaft)
Ten new books for library
Suppository mold
Electric hot plate
Crane aspirator (built in water line)
Rack and cutter for laboratory wrapping paper
Rinsing case for bacterial filter candles
Bottle rinser for distilled water
Steel filing cabinet (for literature and records)
Steel shelving for two new areas
Electric adding machine
Suppository manufacturing machine
Electric power line with multiple outlets
Stainless steel tank (10 gallon) with high speed mixer (on order)

Each purchase was made to fill a definite need and plans for use of the equipment were made well in advance of purchase. The sequence of these purchases becomes more significant when it is understood that an early successful project permits rapid administrative approval of later requests. The total cost of new equipment, including installations, to date about $3,000.00.

A used kardex file was obtained from the Admitting Department and a relisting of the prescription pricing file became the beginning of a new accounting system. By this time the ward stock drug list had matured to the point which justified a revision in the form of a printed requisition blank, styled to permit peg board tabulation. To the cardex price list was added a material cost figure of each item, and the secretary was instructed to post material cost and billing prices on each prescription form while preparing the drug charges. Thus we were able to total the material cost of all drugs dispensed and quickly prepare a monthly financial report for the accounting department and the administration. A running value-inventory is kept with comparative ease. Our fi-



Sample Formulary Page
Springfield City Hospital



SPRINGFIELD CITY HOSPITAL

PHARMACY NEWS LETTER June 30, 1949

Vol. 3 #6

PROTAMINE SULFATE

5 cc Ampuls
1% (50 mg.) in
Isotonic Saline

This substance possesses an attraction for heparin and heparin-like substances in the blood stream. Its antiheparin action is said to be sufficient to inactivate approximately an equal weight of heparin. Protamine has been isolated from a combination of nucleic acid and a protein-like strong basic substance found in the sperm of salmon a species of fish.

In heparin overdosage it is recommended that protamine sulfa be administered in milligram dose equal to milligrams of been given in the preceeding 3 to 4 hours. The so slowly intravenously taking one to three minute

Protamine Sulfate is also believed to be hemorrhagic diseases in which. it has (heparin-like) substance i suggested is 5 to 8 mg. two equal portions. isotonic saline so administratior

Sample Page of

Pharmacy News Letter

first nancial report is prepared in three days after the end of each month without interfering with the current work of the secretary during that period.

Pr

This monthly report consists of the following subdivisions of Material Cost:

- Ward Stock Drugs and Supplies for each Department (Not charged to patient)
- Prescription
- Penicillin
- Streptomycin
- Ward Stock Narcotics
- Prescription Narcotics
- Drugs for Central Supply Administration (All intravenous drugs)
- Clinic Prescription Drugs

This system of accounting is simple and easy to execute. We know too, that it has played a major role in proving that our services are beneficial financially. Therefore, it has helped to justify the expenditures . for equipment necessary to build a more effective hospital pharmacy.

The Pharmacy Committee, appointed by the Medical Staff, has been very cooperative and with this assistance we have been preparing a Formulary which will be published soon.

About one year after we began this work, we found that the average total volume of drugs dispensed per month had more than doubled. We now average 4,000 prescriptions per month (this number does not include any intravenous medicaments). The material cost of ward stock drugs dispensed is about $900.00 per month. One pharmacist now devotes 80 per cent of his time solely to manufacturing and compounding. The list of products routinely prepared in the department now numbers over one hundred. The Pharmacy now has four rooms and this provides separate units for dispensing, administration, manufacturing and storage.

The program does not end here, for we have many additional plans. We are confident that greater financial gains through lowered cost of operation will continue to warrant the establishment of new professional services. As in the past, benefits of savings will be passed along to the patient.

We take this opportunity to express appreciation for the source of many ideas to THE BULLETIN, Hospital Pharmacy Meetings, and Institutes on Hospital Pharmacy and many fine individual practitioners in this field of pharmacy.

Preparation of CHLOROMYCETIN SOLUTION for INJECTION

By Wm. P. O'Brien, Chief Pharmacist
Touro Infirmary, New Orleans, La.

On reading the many articles in the medical and pharmaceutical journals and bulletins and the manufacturer's literature, one is at once mindful of the curative and even lifesaving potentials of the newer antibiotic drug, Chloromycetin.* In the treatment of those infections and diseases for which it is indicated, Chloromycetin is very effective and relatively non-toxic. However, Chloromycetin has one limitation which, unless removed by the dispensing pharmacist, deprives many patients from receiving the benefit of its much needed therapeutic action. Its use is limited to oral administration because the pharmaceutical manufacturer supplies it only in capsule form at present.

The chief purpose of this paper is to supply to the dispensing pharmacist information for the preparation of Chloromycetin in sterile solution form for parenteral administration. And it is hoped, thereby, that those patients who are denied Chloromycetin therapy because of their inability to retain it due to nausea and vomiting or from other causes relative to oral administration of the drug, may enjoy its health restoring benefits through parenteral administration.

CHEMISTRY

Chloromycetin (Chloramphenicol) chemically is D-threo-2-dichloroacetamido-1-p-nitrophenyl-1,3-propanediol. It occurs in elongated tablets or needles of pure crystalline antibiotic, white in color. It is relatively stable in that it retains all of its therapeutic activity in a pH range of 0.4 to 9.56. At pH 10.82 only 13 per cent of its activity is retained. It has a very bitter taste, and is not very soluble in water. It is soluble to the extent of 12 per cent in propylene glycol, and readily soluble in chloroform and ether.

Peculiar to the chemical structure of Chloromycetin is the presence of a nitro-benzene arrangement in its molecule. No such nitro grouping has ever before been found associated with the product of any living organism. In fact, this grouping shows up in violent poisons. Another peculiarity of this molecule, equally foreign to products of living organisms, is the presence of chlorine (non-ionic). It is due to the presence of chlorine in its molecule and to the fact that it was originally produced by the newly classified microbe Streptomyces venezuelae, that the name Chloromycetin was coined for this newer antibiotic drug.

PREPARATION OF CHLOROMYCETIN SOLUTION

In order to obtain the optimum of antibiotic activity from the Chloromycetin solution under preparation, all apparatus used in its manufacture must be STERILE. The author autoclaves the mortar and pestle (glass), graduates, beakers and scalpel before use in making the solution.

The Chloromycetin is obtained by emptying the required number of Kapseals. For example, if 30 cc. of 10 per cent Chloromycetin solution is desired, it is necessary to open 12 Kapseals each of which contains 0.25 gram of the drug. (The Kapseals contain only Chloromycetin.) The outsides of the Kapseals are sterilized by wiping off with 70 per cent alcohol and immediately dried by wiping again with sterile gauze. Ether may be used instead and wiping with gauze dispensed with. The Kapseals are then cut open with a sterile razor blade or scalpel and emptied into the sterile mortar. In emptying the Kapseals, care is exercised to avoid touching the drug with the fingers of the operator and aseptic conditions are maintained throughout the preparation of the solution.

The author has prepared solutions of 7.5 per cent, 10 per cent and 15 per cent Chloromycetin. The 15 per cent solution is not stable, a precipitate of amorphous Chloromycetin appears on

* Available as Chloromycetin Kapseals, 0.25 Gram, from Parke, Davis and Company, Detroit, Mich.

standing after two or three days at room temperature.

A volume of propylene glycol, N. F. grade, equivalent to the volume of the finished product, is heated in a sterile beaker on a sand bath to 158° F. (70° C.). While the propylene glycol is heating, the filter apparatus is readied for use as follows: A Seitz filter containing a bacterial filter disc is fitted into a 250 cc. suction filter flask with a rubber stopper. The top opening of the Seitz filter is covered over with brown or white paper which is tied on with a cord or string. A piece of rubber tubing is fitted on the suction tube of the filter flask and same is clamped off two or three inches from the open end. The apparatus is placed in the autoclave and sterilized for 20 minutes at 121.5° C.

During sterilization of the filtering apparatus the Chloromycetin solution is prepared as follows:

The Chloromycetin is triturated well until a very fine powder is obtained and then a volume of the propylene glycol equivalent to half the total volume of the solution being prepared (heated to 158° F. (70° C.) on sand bath) is added slowly to the Chloromycetin in the mortar and triturated until the drug is well suspended. Distilled water, equivalent in volume to 25 per cent of that of the total volume of the required amount of the solution and heated to 176° - 194° F. (80° - 90° C.) is added with stirring to the suspension. The contents of the mortar are now transferred to a sterile cylindrical graduate and the volume increased to that of the desired amount of finished product by the addition of propylene glycol (158° F.). The last addition of propylene glycol should be poured into the mortar first and stirred well therein so as to rinse out all remaining traces of Chloromycetin suspension.

The Chloromycetin solution-suspension is transferred to a sterile beaker and heated on the sand bath with constant stirring until complete solution is effected. Solution is usually effected within two or three minutes at a temperature of 180° - 183° F. (82° - 84° C.). The beaker must be removed from sand bath as soon as solution is complete. Overheating results in decomposition of the Chloromycetin. Decomposition is evident if the solution changes to a dark amber or orange-brown color.

The solution is immediately transferred to the sterile Seitz filter and collected in the sterile filter flask. (It will be noted that the steps for preparation of the solution have been planned so as to coincide with the sterilization of the Seitz filtering apparatus. The author discovered that by so doing, the filtering apparatus was removed from the auto-

Frances Pizzolato Wm. P. O'Brien

clave around the time that solution of the drug is effected on the sand bath. This dual timing of operations has a time-saving value in the filtering operation. The hot solution is not chilled as the case would be if it was poured into a cold Seitz filter.

After filtration of the Chloromycetin solution has been completed, it is transferred from the filter flask to the sterile vial or vials with strict aseptic manipulation. The vial is stoppered immediately upon being filled with a sterile rubber stopper (preferably of the apron type).

DOSAGE AND ADMINISTRATION

The dosage varies with the type and character of the infection. For example, in treatment of scrub typhus a total dosage of 5 to 6 grams is given over the first twelve to eighteen hours. In contrast, the response of typhoid fever to Chloromycetin is not so abrupt and treatment is continued for at least eight days; 3 to 6 grams is usually given the first day. The dosage, in any event, will be calculated by the attending physician. However, the pharmacist may be asked to calculate the volume of solution to be administered in order to obtain a certain dosage of the drug. If the solution is to be administered intramuscularly, then it should be prepared as concentrated as possible so as to reduce the amount necessary to give in order to obtain the dose of drug desired. A ten per cent solution will contain 100 milligrams per cc., and five cc. must be injected if a dose of 0.5 grams is wanted. If large doses are desired, the solution should be given in two or more injections in different sites on the same region of the body. This overcomes the severe pain which some patients experience when large amounts are given in a single injection.

Solution of Chloromycetin has been administered both intramuscularly and intravenously. The intramuscular injection is preferable over the intravenous route because of the mild hemolytic action of propylene glycol. Solution of Chloromycetin, as prepared herein, can be administered through a 21 gauge needle with moderate pressure exerted on the piston of the syringe.

NOTEWORTHY OBSERVATIONS MADE BY THE AUTHOR

Freshly prepared solutions of Chloromycetin vary slightly in color from colorless to a very light yellow. The more concentrated solutions are usually pale yellow and the author attributes this as probably due to the natural phenomenon of certain crystals appearing to be darker colored in solution than in their natural dry crystalline state.

Solutions may be administered intravenously or intramuscularly as already stated under Dosage and Administration. Some degree of pain is felt with intramuscular administration which the author believes to be caused by viscosity more than drug or solvent irritation. Less pain was reported from injections of solutions containing 25 per cent water than from those made with propylene glycol as the solvent alone.

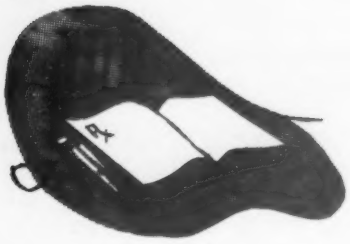
One gram of Chloromycetin displaces 0.6 to 0.8 cc. of propylene glycol in making the solution. This should be kept in mind because failure to allow for the displacement will cause production of solutions of weaker concentration than calculated.

During experiments to determine the solubility of Chloromycetin and to find, if possible, a better menstruum for making solutions of this drug, the author discovered that microcrystalline Chloromycetin was produced as follows:

One Kapseal (0.25 Gm.) completely dissolved in a solution containing one cc. propylene glycol and one cc. distilled water with the aid of heat. A precipitate of micro-crystals formed when the solution was cooled to 60° F. and a thixotropic gel resulted. As characteristic of thixotropic gels, fluidity was re-established by shaking the test tube containing the gel. Heating again to 120° F. effected resolution of the micro-crystals. The author makes mention of these observations pertaining to the gel because he feels that the crystals so produced could have been injected intramuscularly and possibly a new field of injection therapy with Chloromycetin may be perfected. The micro-crystals produced as described were easily drawn up through a 19 gauge needle.

Grateful acknowledgement is herewith made of the able assistance rendered to the author during the preparation of these solutions by Miss Frances Pizzolato, Assistant Chief Pharmacist.

* *



TEACHING ACTIVITIES

of the Hospital Pharmacist

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In order to evaluate and survey the role of the pharmacist in the teaching program of a modern hospital, it may be well for us to consider the changes which have taken place in the practice of medicine and more particularly, in the practice of pharmacy in the last twenty-five years. One of the basic changes has been that the great manufacturing pharmacists have developed their research and manufacturing resources to such a degree that the practicing pharmacist now obtains the greater share of his preparations from the pharmaceutical manufacturer. This dependence upon the pharmaceutical manufacturer represents a logical step in the development of practical pharmacy, because all of us realize that the laboratory facilities available to the average pharmacy are limited and while we still prepare many prescriptions and preparations in our own pharmacy, it would be well nigh impossible to prepare the fluid extracts, the tinctures and more specifically, the biologicals and antibiotics which in recent years comprise so important a part of our service to the patient and physician. As pharmacists, we must realize the rigid controls and specialized personnel required by the manufacturing pharmacist in order to produce these substances in sufficient quantity and economically.

While it is, therefore, true that one of the functions of the pharmacy, namely, the actual preparation of the drugs used in the treatment of disease, has been transferred from the practicing pharmacist to the manufacturing pharmacist, it does not mean that our importance in the hospital has in any way diminished. Rather, it has resulted in an increased responsibility on our part for the storage and proper dispensing of these many products and has thus, extended our service to the patient and physician. As practicing pharmacists, we must accept this change as a natural development in the science of pharmacy and must answer this challenge by increasing our knowledge of these newer biologicals and antibiotics, particularly, as to their potency, method of administration, storage and often undue reaction on the patient, even though we are not physicians. The advent of these newer antibiotics has forced the practicing pharmacist to increase his knowledge of chemistry and more particularly, physiology in the broad sense. While we are, of course, not practicing physicians and are at the command of the practicing physician in deciding what drugs or antibiotics should be administered, we nevertheless, cannot escape the responsibility of knowing the indications for the administration of these substances or their effect. This knowledge is necessary for two reasons; one, in the performance of any task or duty, the appreciation of the why and wherefore is urgently necessary if there is to be enthusiasm for the work; two, if we are to assume responsibility and duty of teaching nurses, we must be able to answer questions posed by the nurse who has been trained in anatomy, physiology, and therapy.

I have, therefore, spent time in prefacing the more immediate problem of the pharmacist's participation in the teaching program in the hospital by reviewing the need for the pharmacist to constantly increase his knowledge of the fields of chemistry, physiology, and practical therapeutics in the hospital if he is to keep abreast of the times, not only as a practicing pharmacist but as a teacher in the nursing school or hospital proper.

The hospital pharmacist is the logical person to teach pharmacology to the nurse for by virtue of his training, he is versed both in chemistry and applied pharmacy and pharmacology. I should like to emphasize this point a bit further by the following considerations:

1) The pharmacist's education includes courses in organic and pharmaceutical chemistry which gives him a thorough knowledge of alkaloids, hormones and vitamins as well as basic drugs. Through these fundamental courses he acquires technics and skills which may be made utilized not only in the synthesis and analysis of compounds, but which can be used likewise in teaching.

2) Through his intensive preparation in the study of the medicinal agents contained in the United States Pharmacopoeia, the National Formulary and the

*Presented at the St. Louis Institute on Hospital Pharmacy, June, 1949.

New and Nonofficial Remedies, he becomes thoroughly familiar with the large number of drugs which form the armamentarium of therapeutics.

3) His actual experience in handling drugs in which the emphasis is placed upon the proper storage, stability, administration and incompatibility of drugs during his professional training.

It is with this scientific and pharmaceutical background that the pharmacist superimposes his own training in pharmacology.

Furthermore, the hospital pharmacist has ample opportunities to augment his knowledge and professional experience.

1) Through his daily contacts with physicians and medical representatives;
2) Clinical observations of drug effects upon patients within the hospital;
3) Through the perusal of professional literature;
4) Through his continued study.

He thus gains a broadened and extensive knowledge of medicinal agents, their preparations, effects and uses.

Therefore, from what has been stated above it may be conceded that the hospital pharmacist is not only the logical person to be entrusted with the responsibility of teaching pharmacology, but because of his professional training, experience, and position on the hospital staff, he is the best qualified individual to do this job. His role need not necessarily be confined to the compounding and dispensing of drugs, but may extend to that of an education in the school of nursing as well.

While it is true that a well trained nurse who has received a B.S. in chemistry might teach chemistry as such, such a nurse is not properly trained and qualified to teach pharmacology. Even in the field of pure chemistry it would seem to me that the pharmacist who has had advanced courses in chemistry is in a far better position to teach nurses the therapeutic implications of chemical reactions as they apply to the use of drugs in the treatment of disease.

Having considered the nurse as a potential teacher of pharmacology and found her wanting to a degree as compared to the pharmacist, the only other individual eligible as a teacher of pharmacology in the hospital is the physician. It is, of course, true that the pharmacist is subservient to the physician in that the doctor decides what drugs and medications should be administered. This fact, however, does not necessarily indicate that the average practicing physician is at an advantage in teaching nurses pharmacology. I think that our busy practicing doctor friends will agree with us that in the press of a busy practice with the ever-increasing rate of progress in the new methods of diagnosis and treatment, the busy physician is hard-pressed to avail himself of the various new drugs and antibiotics, particularly in respect to the various potencies and physical forms of these new therapeutic agents. This is no reflection on the busy physician for we all realize that the greatest function of the doctor is to diagnose illness so that the proper remedy may be used. The doctor of today knows the remedy for a specific disease but with the multiplicity of names and physical forms of the same therapeutic agents, the doctor has come to depend on the hospital pharmacist for considerable information in these matters. Most doctors are greatly appreciative of the newer therapeutic information which they obtain from the detail men of the pharmaceutical manufacturers who were for the most part pharmacists before embarking on the professions of so-called "detail man" or traveling "pharmaceutical missionaries". They are even more deeply grateful, I have found, to the hospital pharmacist who is able to supply them with the information they need as to these new remedies. I think the doctor realizes that just as the compounding and dispensing of drugs passed from the hands of the physician to his ally, the pharmacist, several generations ago, the knowledge of new advancements in drugs and antibiotics become available to the hospital pharmacist as soon as they do to the physician and often this information is supplied in greater detail to the hospital pharmacist so that he or she is a ready source of information in these matters. If we remember further that the doctor's training in chemistry and pharmacology occurs in the early part of his medical education and that information and knowledge concerning the more immediate features of the practice of medicine supplant this information as he leaves the medical school, it would seem logical that the instruction of the nurse in the matter of pharmacology falls upon the shoulders of the hospital pharmacist. This does not mean that the hospital pharmacist should invade the field of diagnosis or medical practice, but he is certainly in an ethical position to consult with doctors who are using the drugs and antibiotics that he is dispensing. In this manner he gains actual information as to the results and the indications for which these substances are being used in his particular hospital and this information is extremely valuable in formulating his teaching program to the nurses. By knowing something of the actual use of the therapeutics he dispenses, he can call attention to the nurse to specific cases and thus give the nurse the opportunity to observe first-hand the effects of the substances they are studying. This type of teaching in pharmacology or applied pharmacy is far more valuable to the nurse than the dry recital of facts which cannot be correlated to a specific instance

or patient that the nurse has actually seen. It is this type of teaching in pharmacology that approaches real correlation and clinical teaching because it stimulates the nurse to ask questions of both the attending physician and the pharmacist.

In this connection I think it is important for us as hospital pharmacists to call attention to the fact that if we are to keep pace with the increased tempo in nursing education, the hospital administrators and directors of the nursing schools must provide us with the opportunity to continue our education both in pharmacy and allied sciences such as biology and chemistry. It is unfortunate that the personnel of the pharmacy is often so limited that it is difficult for the pharmacist to absent himself for several weeks. However, if we are to be entrusted with increased responsibility in the teaching program which requires newer knowledge, some provision must be made so that we are properly prepared to meet this responsibility. For those of us who are located in cities where there are medical schools or large pharmaceutical manufacturers, the opportunity for continuous education is present and it is up to us to avail ourselves of it even though it may mean sacrifice in time and convenience. However, for those of us who are located in cities which are distant from centers of medical education, there is great difficulty in continuing our medical education adequately even though we do keep abreast of the times with the newer literature provided by periodicals, books and the information supplied by the manufacturing pharmaceutical houses. In this situation, it is important that the hospital administrator realize that the hospital pharmacist must be "re-educated" at definite intervals at teaching centers if he is to continue to be alert and stimulate and instruct nurses. As to the basic qualifications of the pharmacist who is to be an instructor in pharmacology, it would seem that he should possess at least a B.S. degree and should in addition have taken several courses in education. The fact that one is a competent pharmacist does not predicate that he or she is a competent teacher and all of us have, I am sure, seen competent scientists in many fields who were extremely poor teachers. In addition to courses in education which are invaluable, two fundamental factors make for good teaching, namely, enthusiasm for the subject and adequate preparation. It is unfair to the student nurse to assign a certain number of pages in a textbook without the teacher pointing out the importance of various paragraphs and emphasizing in his words and in the light of his own experience the more important subject matter. The purpose of a teacher is literally to teach and while it is true that students can be spoon-fed, it is far better to spoon-feed student nurses so that they emerge from the course with certain definite fundamental facts, than it is to assign reading without guidance and permit them to wallow in bits of half-information, misconception, and confusion. It would seem to me that in so important a subject as pharmacology, the nurse should emerge from the course with confidence in her knowledge of the dosage and effects of the every-day medications used on her patients.

While definite instruction in certain fundamental facts is most essential, the observations of the nurse of the patient taking the drug while under her care is the lesson that will leave an indelible imprint on her mind and all teaching should be aimed at this idea, although all of us realize that it is not possible for the nurse to observe the clinical effects of all the drugs she is studying at the time she is taking her course. Because of the nurses' crowded curriculum, nurses are sometimes assigned to specialized services such as obstetrics or pediatrics where there may be a relative limitation in the number of medications used. In such situations it is the duty of the pharmacist to inform the nursing class where a certain drug is being used and to obtain the cooperation of the nursing supervisor so that provision is made for all nurses to observe the effects of certain treatment.

Since the hospital is a laboratory for the student, the pharmacology taught should be integrated with the clinical subjects. The administration and effects of drugs are to be learned at the bedside of the patient. Students learn the action of morphine and similar drugs when giving the patient pre-and postoperative care, and for the relief of pain. The action of the digitalis group can be seen on the patient with a cardiac condition. The dramatic results of penicillin and streptomycin are clearly evident when charting the temperatures of patients being treated for infectious diseases. Thus by teaching and studying the drugs and the conditions in which they are used together the student gains a better understanding of both. This also eliminates the mere memorization of meaningless facts which are usually retained only until the final examination in the course. Some applications on the proper administration of drugs and their effects can easily be injected into the "morning reports" and the case studies written by the students in the wards.

While the teaching program in every institution will vary, certain basic methods may be employed in any institution and I should like at this time to discuss those which have seemed most effective:

1. Short period of training in the hospital pharmacy itself: While it is, of course, obvious that the nurse will not practice pharmacy, there are certain fundamental observations that can be made in the pharmacy if the time can be found to permit the student nurse to spend a week or more as

an observer and "errand girl" or general handy girl, if you will, in the pharmacy. Among these observations are the necessity of writing legibly so that valuable time is not lost in filling prescriptions. Along with the need for legibility on orders is the requirement of filling out completely the requisition blank so that the room number or attending physician is not in doubt. While these may be relatively unscientific matters, they are of practical importance in rendering prompt pharmaceutical service to the patient and after all, we must not let our pursuit of science becloud the fact that both the pharmacist and the nurse strive for the same objective, namely, efficient service to the patient. Other practical observations which the nurse could make in the pharmacy are the importance of noting whether biologicals are outdated which is sometimes a cause of poor therapeutic result. Further facts of importance to the nurse are the need for adequate refrigeration of biologicals so that their therapeutic effect is not nullified. Further facts that can be gleaned from a short stay in the pharmacy are the need for proper labeling, clean utensils, careful measurement in the dosage of drugs and methods of sterilization. A short stay in the pharmacy serves to acquaint the nurse with the difficulties that confront the pharmacist and make for better understanding between the nursing staff and pharmacist.

2. Textbooks and periodicals: There is no ideal textbook in the teaching of pharmacology and yet it is important that some type of textbook be used so that the nurse has some reference book related to the subject she is studying. If the textbook does not contain the information she seeks, it will provoke her into looking further or asking questions. We should not lose sight of the fact that in addition to supplying us with potent drugs and biologicals, the manufacturing pharmacist has in recent years supplied the medical, pharmaceutical and nursing professions with small texts and more important illustrations and colored plates which are of superlative excellence as teaching material. I have heard many doctors remark that the artistic and scientific excellence of many of these illustrations exceeds that of many textbooks. We should not forget much of this material is prepared under the supervision of qualified medical men. The pharmacist who is teaching should keep a file of this material which can be used during the organized course by demonstrating to the students and posting it on the bulletin board in the classroom. In addition, pharmacists can be of great aid in acquainting the nursing staff with the salient features concerning newer drugs by having the nursing supervisor post on the bulletin board at the chart desk illustrations and information concerning newer drugs. In this way the pharmacist acts as a constant teacher both to the undergraduate and graduate nurses of her hospital. The instructor can further use this material in preparing slides which can be used on lanterns which project the colored page, the so-called reflectoscope.

3. Demonstration of drugs and ampuls: Wherever possible the pharmacist should actually demonstrate the newer substances so that the nurse is acquainted with their appearance and physical form. He should also show what may happen if the agent is old or undergoes deterioration from heat or contamination. Physical changes which may occur but not indicate loss of potency should also be demonstrated.

4. Medical films and lantern slides: Many of the pharmaceutical houses have excellent teaching films. The nursing profession has been kept in mind in the preparation of many of these films. The pharmacist should write the educational director of the pharmaceutical houses to determine what films would be suitable as correlating aids in the teaching of pharmacology.

5. Experiments and field trips: Time does not permit the nursing student to perform for herself many experiments in pharmacology, but it adds considerable to the course if the instructor can demonstrate certain reactions in front of the class and this should be done wherever possible. In addition, if the hospital is located in a city where there is a medical school and pharmaceutical manufacturing companies, arrangements should be made so that one or two field trips can be made to the pharmacological laboratory of the medical school as well as the laboratory of the manufacturing pharmaceutical chemists. Such trips are always extremely instructive and tend to generate enthusiasm for the subject.

CONCLUSION

In conclusion, therefore, we see that the pharmacist who is to instruct the nurse in pharmacology must first realize the scope and relationship of pharmacy to nursing. He should also be adequately prepared both in his profession and in his ability to instruct others in an organized and systematic way. Above all, he must be enthusiastic in his approach for he is dealing with young women who are greatly influenced by their teachers and must be ever aware of the fact that pharmacy as all other sciences is never static but constantly changing and that new ideas and concepts must be accepted and evaluated for what they can contribute in spite of our human tendency to resist the changes that life is always creating.

Sodium Sulphacetamide Eye Drops*

by

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SINCE the introduction of the sulphonamides in 1935, many derivatives have been placed on the market, and pharmaceutical preparations of almost every type have been prepared from them. For ophthalmic use, however, one derivative, sodium sulphacetamide, has been used much more frequently than the rest, and it can fairly be said to be the standard sulphonamide for use in eye-drops in Great Britain. Two points about sulphacetamide drops have been the subject of correspondence in THE PHARMACEUTICAL JOURNAL[1, 2, 3, 4]—the strength and the question whether or not to add a buffer to the drops. Another point of interest is the development of a brown colour in the drops on storage. This has been observed by numerous pharmacists, but I have not been able to find any references to the subject in the literature.

The following notes record some experiences with the drops under the points mentioned above:—

STRENGTH OF SOLUTION

The Medical Research Council Memorandum (No. 10) on the sulphonamides recommended the use of strengths from 2·5 to 10 per cent. for conjunctivitis and 10 to 30 per cent. for corneal ulcers. The B.P.C. Seventh Supplement recommendations are: 10 per cent. for conjunctivitis and the prophylaxis of ocular infections after injuries and burns; 2·5 per cent. for less acute conditions and for treatment of mustard gas infections; 30 per cent. for ophthalmia neonatorum. Knight[1] stated that strengths from 10 to 60 per cent. are used at the Western Ophthalmic Hospital with 30 per cent. as the most frequently prescribed, whereas Clarke[3] recorded that no strengths greater than 30 per cent. are prescribed or dispensed at the Royal London Ophthalmic Hospital. The B.P. gives a solubility of 1 in 1·5 at 15·5° C., and Clarke reported that it was impossible to prepare 60 per cent. solutions in the cold, although the drug is freely soluble in hot water. Knight[4] confirmed that slight crystallisation occurs in the 60 per cent. solution, but solutions of 50 per cent. and less are quite satisfactory.

The N.(W.)F. (1947) included formulæ—Guttæ Sulphacetamidi Fortis, containing 30 per cent. with 2 per cent. of boric acid and described as being for use in the presence of infection, and Guttæ Sulphacetamidi Mitis, containing 10 per cent. with 2 per cent. of boric acid for prophylactic use. The stronger solution appears to be more frequently prescribed at present, and many ophthalmologists believe that solutions weaker than 30 per cent. are valueless. Robson and Tebrich[4] made a study of the concentrations of sodium sulphacetamide in ocular tissues after application of solutions of the drug to rabbits' eyes. They found that chemotherapeutic concentrations could be maintained in some tissues for more than two hours. Their results indicated, however, that even with a 30 per cent. solution of the drug, application should be carried out at frequent intervals to maintain effective concentrations over long periods. The same paper gave the warning that oedema of the cornea tends to develop if 30 per cent. solution is left in contact with the eye for more than 15 minutes. All the solutions used for prophylaxis and treatment are markedly hypertonic, a solution containing about 3·6 to 3·8 per cent. of sodium sulphacetamide being isotonic with the lachrymal secretion.

*p*H VALUE OF SULPHACETAMIDE DROPS

There is a wide variation in the *p*H value of lachrymal solution given by various authors.

Henrioule[6] in 1936 suggested 7·8, while Knight[1] quoted Duke-Elder as giving the *p*H varying between 7·2 and 8. Pederson-Bjergaard[7] referred to six papers giving the *p*H as the same numerical value as that of blood (7·25 to 7·40) and three giving slightly higher values (Györffy 6·3 to 8·4; Lipschutz 8·0; Oguchi and Nakashima 8·4 to 8·6), Pederson-Bjergaard tested the *p*H of 10 normal men and women of ages varying from 23 to 57, by both electrometric and colorimeter methods. By the former method he obtained an average value of *p*H 8·24 (lowest 8·02, highest 8·45) and by the latter 8·22 (lowest 8·0, highest 8·4).

The Pharmacopœia states that the *p*H of a 10 per cent. solution of sodium sulphacetamide is about 9, and Anthony[4] gave a table of the *p*H of solutions of several strengths which is shown below:—

Concentration %	0·5	1·0	2·5	5·0	10·0	20·0	30·0
*p*H	7·5	7·8	8·0	8·5	8·8	8·9	9·0

Anthony did not state the method by which these values were determined, but they agree fairly closely with results obtained using universal indicator. He has since informed me that this was the method he used. In the earlier papers on the use of sulphacetamide eye-drops no reference was made to the desirability or otherwise of adjusting the *p*H. Several methods have since been mentioned in the literature during the past few years, and *p*H adjusted sulphacetamide sodium is on the market both as solution and in powder form. The 1947 N.(W.)F. formulæ both for 10 per cent. and 30 per cent. drops included 2 per cent. of boric acid as a buffer. The weak N.(W.)F. formula has a *p*H of 6·88 and the strong 7·3. These formulæ have been retained in the N.F., 1949.

*Reprinted from *The Pharmaceutical Journal* (London), September 3, 1949, p. 177.

*Presented at the General Assembly of the International Pharmaceutical Federation in Amsterdan in September, 1949.

Anthony[8] proposed a borax-boric acid buffer solution and Fowler[9] suggested the addition of either 1·25 per cent. of sulphacetamide, or 6 mils of normal hydrochloric acid solution for every 100 grammes of sodium sulphacetamide used. In 1945 Knight[1] reported no adjustment of *p*H was made in sodium sulphacetamide eye drops used at the Western Ophthalmic Hospital and that no patients complained of discomfort after using drops of up to 60 per cent. strength. He has since informed me that a buffer is now used as some ophthalmologists consider neutral solutions less liable to irritate the eye-lids and the skin surrounding the eyes. Clarke[10] has stated that no buffer is used at the Royal London Ophthalmic Hospital and that no complaints of excessive stinging have been received.

Howard[10a] examined the effect of various strengths of boric acid on the *p*H of 10 and 30 per cent. sodium sulphacetamide solutions, both in distilled water and 50 per cent. glycerin and distilled water (the latter is used as ear drops in Australia). The *p*H determinations were made electrometrically. His results were as shown below :—

SOLUTIONS OF SODIUM SULPHACETAMIDE IN DISTILLED WATER

Composition	*p*H
10 per cent. sodium sulphacetamide	8·4
+ 0·5 per cent. boric acid	7·6
+ 1·0 „ „	7·4
+ 2·0 „ „	7·0
30 per cent. sodium sulphacetamide	9·6
+ 1·0 per cent. boric acid	8·1
+ 2·0 „ „	7·8
+ 3·0 „ „	7·6
+ 3·5 „ „	7·4
+ 4·0 „ „	6·9*

* A precipitate was formed with 30 per cent. sodium sulphacetamide and 4 per cent. of boric acid.

SOLUTIONS OF SODIUM SULPHACETAMIDE IN 50 PER CENT. GLYCERIN

Composition	*p*H
10 per cent. sodium sulphacetamide	8·4
+ 0·25 per cent. boric acid	7·3
+ 0·5 „ „	6·9
+ 1·0 „ „	6·5
30 per cent. sodium sulphacetamide	9·6
+ 0·5 per cent. boric acid	8·0
+ 1·0 „ „	7·8
+ 2·0 „ „	7·75
+ 3·0 „ „	7·0*

* A precipitate was formed with 30 per cent. sodium sulphacetamide and 3 per cent. boric acid in 50 per cent. glycerin solution.

As a result of this work, Howard suggested the use of a stock solution containing 30 per cent. of sodium sulphacetamide and 3 per cent. of boric acid as a convenient method of preparing various strengths of buffered drops.

Following a report from a retail pharmacist[11] and an ophthalmic surgeon[12] that more complaints of stinging had been received with the N.(W.)F. formulæ than with the unbuffered solutions previously used it was decided to examine this point further. Solutions of 30 per cent. of sodium sulphacetamide in distilled water with 2 per cent. of boric acid were instilled into one eye and a few drops of the unbuffered 30 per cent. solution into the other. The subjects were unaware of which solution was used for the right or left eye, and were asked to state whether or not stinging was produced and if it was more pronounced in one eye than in the other.

TABLE I

	Number of Subjects						Total
Group	I	II	III	IV	V	VI	
Report of Subject							
More stinging with buffered drops ...	29	15	19	10	14	36	123
More stinging with unbuffered drops ...	11	10	13	3	15	22	74
No stinging with either	0	13	3	0	3	0	19
Stinging with both ...	0	8	9	2	4	5	28
No opinion or undecided	5	0	0	0	0	0	5
							249

The results are shown in the table. Group I included 33 patients with conjuctivitis or blepharitis and 12 normal controls at an ophthalmic hospital. Groups II to VI were pharmaceutical students. In only one of the groups did more of the subjects find the unbuffered solution produce greater stinging than the buffered, and in this case the difference was only 15 against 14. In most cases the difference was slight, and many subjects found difficulty in deciding if a difference was perceptible. In a further group distilled water was instilled into each eye without the subjects being aware of the change. In this case four subjects noted more stinging in the right eye, three more in the left, three reported stinging in both eyes and nine none in either. From these results it appears that drops buffered with boric acid cause slightly more stinging than plain unbuffered drops, but with either preparation the discomfort is so slight as to be negligible. Drops buffered by the other methods mentioned above and those prepared from buffered powders were tested on a few people, and no marked difference was noted between them and the unbuffered drops.

DEVELOPMENT OF BROWN COLOUR

It is well known that solutions of the sodium salts of the sulphonamides darken on standing, particularly when exposed to light, but there appear to be very few references to the subject and none on sulphacetamide in particular.

James [13] mentioned that sulphanilamide can produce a cyanosis not due to met- or sulphæmoglobin, but to an oxidation product of the drug. He found that pigments could be obtained by oxidation of sulphanilamide and sulphapyridine with calcium hypochlorite or hydrogen peroxide, with or without iron as catalyst. Light was also necessary. The sulphanilamide pigment and the pigment isolated from the urine of cyanosed patients belonged to the indophenol class.

Seikel[14] stated that sulphanilamide oxidises with oxidising agents, such as hydrogen peroxide and potassium ferricyanide, to either azobenzene-4-4′ disulphonamide or to azoxybenzene-4-4′ disulphonamide. Alkaline ferricyanide gave the former, which was a tan colour, and hydrogen peroxide and acetic acid gave the latter, which occurs as shining orange needles. Hydrogen peroxide and sulphuric acid gave a mixture of the two substances above.

Byron[15] mentioned in the Symposium Session of the 1948 Conference that she had noticed an orange colouration in injections of sulphadiazine.

Fishburn[16] reports that sodium sulphadimidine (sulphamezathine) solutions darken distinctly on standing, particularly at elevated temperatures. Solid sulphadimidine also darkens on exposure to light, samples in clear glass bottles eventually becoming quite brown when exposed to daylight.

The same darkening occurs with solutions of sulphaguanidine even when neutral or acid. Similarly, solutions of sodium sulphapyridine and sodium sulphathiazole darken on exposure to light. Ampoules of solutions of the sodium salt of sulphacetamide, sulphadiazine and sulphadimidine (sulphamezathine) obtained from manufacturers were examined. The sodium sulphacetamide solution had a deep brown colour and the sodium sulphadiazine a very pale lemon yellow colour, whilst the sodium sulphadimidine solution was colourless. On exposing these ampoules to direct sunlight for a few days the sulphacetamide and sulphadiazine solutions became appreciably darker in colour whilst the sulphadimidine solution remained water-white, the ampoule presumably being nitrogen filled.

It has been found in practice that very considerable variation in colour of solutions of sodium sulphacetamide can result from the use of different batches of the drug, some solutions being water-white and others having a distinct yellow or brown tint when freshly prepared. This may be due to storage conditions of the powder, since samples exposed to sunlight in white bottles almost invariably gave a coloured solution. A sample of microcrystalline sodium sulphacetamide was exposed to bright sunlight for several days and became markedly brown in colour.

EFFECT OF STORAGE ON SOLUTIONS

(i) EFFECT OF LIGHT.—Samples of 30 per cent. solution were prepared and were perfectly water-white. These were stored under various conditions and examined from time to time. The results are shown in Table II.

TABLE II

Method of Storage Bottles	One Month	Three Months	Nine Months
1. White corked ...	Colour Pale brown	Colour Very marked brown	Colour Deep reddish brown
2. „ stoppered...	„ „	„ „	„ „
3. Amber corked ...	Pale yellow	„ „	„ „
4. „ stoppered...	Nil	Very slight trace	Very slight trace
5. „ dropper ...	Nil	„ „	„ „

All the above were stored at room temperature in diffused light.

Samples exposed to direct sunlight in white stoppered bottles became deep brown within 24 hours compared with several days or even weeks in diffused light.

(ii) Effect of Oxidising Agents.—Oxygen was bubbled through water-white solutions and they became pale brown within a few hours. The addition of 100 volumes hydrogen peroxide caused a very dark brown colour to develop within about an hour. After several hours a brown crystalline deposit appeared and the supernatant liquid remained brown. On filtering off and washing, the crystals were found to have a pale brown colour.

(iii) Effect of Temperature.—Several samples of sodium sulphacetamide solution were autoclaved at 115° C. for 30 minutes, and on removing from the autoclave no darkening in colour was noted, and the samples on storage darkened at the same rate as unheated controls. This contrasts with the experience of Byron[15] with sodium sulphadiazine.

(iv) Effect of Antoxidants.—The effect of 0·1, 0·2, and 0·5 per cent. of sodium metabisulphite on the development of colour was examined and comparison with controls showed that 0·1 and 0·2 per cent. did not prevent the development of the brown colour, but 0·5 per cent. gave complete protection for nine months in samples stored in both corked and stoppered white bottles in daylight. When this solution was placed in direct sunlight, however, a slight yellow colour appeared within about a week. Neither the presence of 0·5 per cent. of sodium metabisulphite nor the use of amber bottles prevents discoloration in samples exposed to direct sunlight.

The addition of 0·5 per cent. of sodium metabisulphite did not appear to cause any more stinging than the plain solution, but it may be thought undesirable to include this amount in eye-drops, and since solutions stored in well-closed amber bottles do not darken appreciably for several weeks unless exposed to direct sunlight, it is probably unnecessary. The practice of some hospitals in dispensing eye-drops in corked bottles is obviously most unsatisfactory.

In an endeavour to find an antioxidant which would be effective in a smaller concentration, 0·012 per cent. of thiourea, which is used to prevent oxidation of ascorbic acid, was added, but this did not retard oxidation. When the amount of thiourea was increased to 0·1 per cent., darkening was not retarded for more than a few days.

ADDITION OF PRESERVATIVES

Owing to the antiseptic nature of sodium sulphacetamide and the high concentrations used, it has not been the general practice to add any preservative to eye-drops containing this drug. During the above work, however, mould growth has been observed in several solutions (30 per cent. strength) stored in stoppered bottles, and it may be advisable to prepare sulphacetamide eye-drops in the solution for Eye Drops recently included in the National Formulary, which contains 0·025 per cent. of methyl hydroxybenzoate and 0·0125 per cent. of propyl hydroxybenzoate. There is some evidence that moulds accelerate the decomposition of sodium sulphacetamide.

SUMMARY

(1) To maintain an adequate chemotherapeutic level with eye-drops of sodium sulphacetamide, frequent application of 30 per cent. solution appears to be necessary.

(2) The N.(W.)F. and N.F. formula Guttæ Sulphacetamidi Sodii Fortis, containing 2 per cent. of boric acid, appears to cause slightly more stinging than unbuffered solutions. Unbuffered solutions appear to be well tolerated by the majority of subjects.

(3) Drops of sodium sulphacetamide gradually turn brown on storage, particularly if stored in water-white bottles and in corked bottles. The brown colour develops more rapidly if oxidising agents are added. It is not prevented by 0·1 or 0·2 per cent. of sodium metabisulphite, but 0·5 per cent. gives complete protection for at least several months in samples stored in daylight, unless exposed to direct sunlight.

(4) Drops of sodium sulphacetamide, stored in amber glass stoppered or screw-capped dropper bottles, will only develop a trace of colour in about six months unless exposed to direct sunlight.

(5) Moulds can grow in solutions of sodium sulphacetamide as strong as 30 per cent., hence it is advisable to prepare them with the N.F. solution for eye-drops.

(6) The results of storage tests confirm that drops prepared according to the general direction of the National Formulary—freshly prepared with aseptic precautions—will be satisfactory. The drops should also be stored in well-closed amber bottles, away from direct sunlight. Amber eye-drop bottles having a dropper *in situ* are quite suitable.

The following note has been sent by Mr. A. Hirtenstein, surgical registrar of the Western Ophthalmic Hospital:—

"Sodium sulphacetamide has been extensively used at the Western Ophthalmic Hospital for the past year both in solution and in ointment form. The usual concentration of solutions varied from 10 to 30 per cent. or more according to the severity and type of the ocular infection.

In my experience the 10 per cent. solution is too weak to have adequate therapeutic value and I prefer using 20 or 30 per cent. solutions. This strength is usually well tolerated by the patients, and sensitivity to sodium sulphacetamide is uncommon as compared with penicillin drops. Solutions stronger than 30 per cent. are mainly used for topical application only (direct application on corneal ulcers).

The only drawback of sodium sulphacetamide lies in its alkalinity; the 30 per cent. solution has a *p*H 9. Some patients complained of burning sensation and discomfort after the installation of the drops.

I have seen several patients with severe irritation of lids and increased conjunctival discharge after using unbuffered solutions of 30 per cent. sodium sulphacetamide; their symptoms disappeared after changing over to buffered solutions of the same strength; I had to conclude from this that the irritation was due to increased *p*H value of the solution.

I have not met with the same experience with buffered solutions and, in my opinion, these should be preferred when using sodium sulphacetamide above the 10 per cent. solution."

In view of the difference in practice between the Western Ophthalmic and the Royal London Ophthalmic Hospitals, it would be of interest if pharmacists of other hospitals would record their experiences with these drops.

REFERENCES

1. Knight, R. E., *Pharm. J.*, 1945, **155**, 298
2. Whittet, T. D., *ibid.*, 1945, **155**, 298
3. Clarke, B. S., *ibid.*, 1946, **156**, 29
4. Knight, R. E., *ibid.*, 1946, **156**, 45
5. Robson & Tebrich, *Brit. Med. J.*, 1942, **1**, 687
6. Henrioule, T., *J. Pharm. Belg.*, 1936, **18**, 529
7. Pederson-Bjergaard, K., *Pharm. J.*, 1948, **160**, 133
8. Anthony, M. I., *ibid.*, 1948, **160**, 360
9. Fowler, F., *ibid.*, 1948, **160**, 451
10. Clarke, B. S., Personal communication
10a. Howard, *Austral. J. Pharm.*, 1949, **54**, 95
11. Davidson, J. O., Personal communication
12. Ridley, F. J., Personal communication
13. James, *Biochem. J.*, 1940, **34**, 636
14. Seikel, *J. Amer. Chem. Soc.*, 1940, **62**, 1214
15. Byron, G. M., *Quart. J. Pharm. Pharmacol.*, 1948, 21
16. Fishburn, A. G., Personal communication.

Acknowledgement is made to Mr. F. R. C. Bateson, Professor H. Brindle, Mr. C. Gunn, Mr. W. Nixon, Mr. F. H. Oliver, and Mr. M. Tapper, and to their students for testing the effects of the drops on the eyes.

CURRENT LITERATURE

AMERICAN PROFESSIONAL PHARMACIST

July, 1949 - "An Ampul Washing Apparatus" by Kenneth Seal. Describes an ampul washing apparatus devised by an English pharmacist.

page 642

"Hospital Formularies" - Lists hospitals having formularies.

page 647

August, 1949 - "A Sterile Medicament Unit" by I. Michaels. Describes a plan for a unit devoted exclusively for the preparation of sterile medicaments.

page 730

September, 1949 - "The Recovery of Silver from Waste Hypo Solutions." Describes methods of recovering silver from exhausted fixing baths.

page 826

HOSPITAL MANAGEMENT

August, 1949 - "Quantity Production of Cortisone, Arthritis Drug, Still Far Off". Explains the unique and extraordinary difficulties and costly process of production of this compound.

page 78

"Basic Research Progress in Antibiotics" by Perrin H. Long, M.D. The second section of the article appearing in the July issue of Hospital Management. Describes Polymyxin, Chloromycetin, Aureomycin.

page 80

September, 1949 - "Basic Research Progress in the Field of Heart Disease" by Arthur C. De Graff, M.D. Discusses the treatment of congestive heart failure, in hypertension, in rheumatic fever, and in the treatment of coronary artery thrombosis.

page 88

"What Does Aerosol Therapy Offer for Hospitals" by Herbert M. Cobe, Ph.D. Describes, defines and illustrates the uses of aerosol therapy including air, oxygen, helium, either alone or combined with antibiotic agents.

page 92

SOUTHERN HOSPITALS

August, 1949 - "Developing a Hospital Pharmacy" by Johnnie Crotwell. Emphasizes the main points for consideration when planning a new hospital pharmacy including: a central location, adequate space, compact, orderly arrangement, modern and sufficient equipment.

page 52

September, 1949 - "With the Hospital Pharmacist" by Joe Vance. Contains several short items of interest including: N.N.R. Round-Up, Cortisone, The Internationalist-WHO, Unwarranted Invasion-the labeling of barbiturates.

page 69

October, 1949 - "With the Hospital Pharmacist" by Joe Vance. More short items - How's Business, Cancer Weapon, Chlorophyll Ointment, What's in a Name, Promising Drugs, A More Elegant Product.

page 54

HOSPITALS

June, 1949 - "Training of Supervisors by Conference" by J. Milo Anderson. The conference method as a means of exchanging points of view and solving common problems among hospital departmental heads is described.

page 56

August, 1949 - "The Hospital Pharmacy Comes to Order" by Estelle Tomlinson. The routine operations of the day are described.

page 45

October, 1949 - "A Five-point System that Ends Waste and Inefficiency" by Carteret A. Alsop, Jr. Hospital pharmacists who are also purchasing agents and control general storerooms will find this article interesting.

page 79

"Antiseptics Precautions" - Organic mercury compounds may cause trouble if used to prepare the skin for operation if there is a break in the skin, due to infection, burns, or scratches.

page 90

(Continued on page 256.)

Therapeutic Trends

New Trends in Medicine and Pharmacy Include ANTIHISTAMINIC DRUGS IN HUMAN TUBERCULOSIS - KHELLIN IN BRONCHIAL ASTHMA - NEW ANTICOAGULANT - DRAMAMINE IN RADIATION SICKNESS - FOLIC ACID ANTAGONISTS TO TREAT LEUKEMIA

ANTIHISTAMINIC DRUGS IN HUMAN TUBERCULOSIS

Effects of antihistaminic drugs upon human tuberculosis are being studied and an encouraging report of 30 cases treated appears in Annals of Allergy 7:306 (May-June 1949). Greatest improvement was shown in patients with tuberculosis pneumonia and other acute exudative lesions. Of notable significance is the fact that as the lesions progress in chronicity, the antihistamine drugs become less effective. Because of the therapeutic effectiveness of this class of drugs, investigation is underway to study the value of combined administration of antihistamines to suppress the allergic components of the disease and streptomycin to suppress the growth of the bacillus.

Drugs used in this study included diphenhydramine (Benadryl), tripelennamine (Pyribenzamine), phenindamine (Thephorin), and thonzylamine (Neohetramine). Patients were started on 50 mg. of the antihistamine three times daily, increasing the dose to 300-400 mg. daily as tolerated. The highest daily dose given any patient was 500 mg. and the longest period of administration was seven months. Benadryl and Pyribenzamine were first used, but they were not well tolerated in large doses. When it was necessary to discontinue a drug because of side effects, patients were given Neohetramine because it is reported to be less toxic than other available antihistaminics. On administration of any of these drugs, no significant changes were observed in the urine, erythrocyte sedimentation rate or differential leukocyte count. A moderate increase in pulse rate was always noted after institution of therapy.

Clinical improvement following administration of the antihistamine drug was apparent but within 2 to 8 weeks after withdrawal, symptoms and signs of the disease recurred and retrogression of the pulmonary lesions were demonstrated by x-rays. However, reinstitution of therapy was again followed by striking improvement.

KHELLIN IN BRONCHIAL ASTHMA

Eleven patients having severe bronchial asthma which could be relieved only by doses of epinephrine and aminophyllin so large as to be regarded as potentially dangerous were relieved following administration of Khellin. This extract is the active principle from the seeds of an umbelliferous plant indigenous to the Eastern Mediterranean area and Arabia where it is known as "Khella." (See THE BULLETIN 4:242 November-December 1947) It has been used in renal colic and ureteral spasm since ancient times.

Experimental studies using Khellin have been in progress in Great Britain and the extract was synthesized in 1948 by the British worker, Davis. (Lancet 1:887 1948) According to these studies, Khellin is considered safer than aminophyllin and in some cases it relieved attacks of bronchial asthma in some patients resistant to epinephrine and aminophyllin. In the British studies daily intramuscular injections or oral administration of Khellin conspicuously reduced the number and severity of the attacks. It was noted by the British authors that the action of Khellin in bronchial asthma is not so prompt as that of epinephrine or of ephedrine, but it is more lasting and since it has no effect on the systemic blood pressure, it can be safely administered to hypertensive patients.

In a study reported in the Journal of the Kansas Medical Society, Khellin was successfully used to treat eleven patients and the author concludes from this limited experience that Khellin is of great value in treating bronchial asthma. Previous use of diphenhydramine hydrochloride and tripelennamine hydrochloride was disappointing. Tablets of 20 mg. each were administered orally. Usually 10 tablets (200 mg.) were given twice daily or in exceptional cases, three times daily. Typical case reports are given.

Only limited supplies of Khellin are presently available and it is expensive. Supplies for this study were obtained from the Physicians' Drug Supply Company, Philadelphia, Pa.

NEW ANTICOAGULANT

Heparinoid is the name of a new synthetic anticoagulant which has been used experimentally on eleven patients according to a report in the Bull. N.Y. Acad. Med. 25:448 (July 1949). Results were based on observations of the anticoagulant action and toxic manifestations.

Heparinoid is a polysulfuric ester of polyonhydromannuronic acid obtained as a water-soluble sodium salt which is stable at room temperature. It is prepared by the sulfation of alginic acid.

A solution of heparinoid was given by the intravenous route to eleven patients a total of twenty-five times. The amount of heparinoid required to prolong the clotting time two to three times the control time was approximately 5 to 10 mg./kg. However, some individual variations in response were observed. This amount is approximately thirteen times that of the sodium salt of heparin necessary to produce comparable maximum clotting times. The duration of action of 5 to 10 mg./kg. given intravenously has been observed to last 4 to 8 hours but the results suggest that activity may be more prolonged than that of heparin given intravenously.

Toxic reactions to the slow intravenous injection of heparinoid were observed in three patients--one severe and two mild. No toxic effects have been observed on the blood, kidneys or liver as determined by the usual tests.

DRAMAMINE IN RADIATION SICKNESS

Use of Dramamine to treat radiation sickness was suggested because of the similarity of the symptoms with those of motion sickness. Symptoms for both conditions include lassitude, nausea and vomiting, anorexia and malaise. It is also believed that the antihistamine action of Dramamine might be advantageous since it has been postulated that its use would be of benefit if histamine toxicity were an etiologic factor.

A preliminary study on the treatment of radiation sickness with Dramamine in a series of 82 patients is reported in Proc. Staff Meetings Mayo Clinic 19:480 (September 14, 1949).

Of the 82 patients treated, marked nausea was present in 53 cases. Patients were seen every day immediately before or after treatment and the complaints and general condition of the patient, as well as the side effects of the drug were noted. The results were classified as excellent, good, fair, and poor. To eliminate the psychic effect as much as possible, a control series of 23 patients was run, the patients in this group believing that the therapeutic drug was being administered. In each case radiation sickness was present prior to the starting of the placebo. This group showed a significantly lower percentage of relief of symptoms than did the Dramamine group.

Maximum therapeutic results were obtained when 100 mg. of Dramamine was given thirty to sixty minutes before treatment, and repeated one and one-half hours after treatment and again in three hours, making a total of 300 mg.

Side effects reported by the patients taking Dramamine included drowsiness, bad taste, paresthesias, and nausea.

FOLIC ACID ANTAGONISTS TO TREAT LEUKEMIA

Clinical trials using Aminopterin and other folic acid antagonists to treat leukemia have been reported in the journal Blood 4:168 (1949). Other preparations used in addition to Aminopterin included a-methopterin, aminoan-fol and a-ninopterin. Results thus far obtained in acute leukemia have been somewhat disappointing although well defined remissions can be secured in about one-third of the cases. In view of the fact that previous reports show that remissions in acute leukemia have been highly unusual and of sporadic nature, use of these folic acid antagonists may be a therapeutic advance.

For administration, the drug was dissolved in sterile normal saline for intramuscular injection daily until a toxic or pronounced hematologic reaction occurred following which the drug was discontinued. The drug was resumed in maintenance dose when the toxic reaction had subsided. Toxic reactions were the rule with Aminopterin administration depending upon the dosage used. Reactions were in the form of ulcerative mucous membrane and tongue lesions, nausea, burning sensation in the upper abdomen and diarrhea, and a form of vascular purpurea with apparent aggravation of the bleeding tendency.

Best results using these folic acid antagonists were obtained in lymphoblastic cases.

INTERNSHIPS in Hospital Pharmacy

Edited By
O. James Inashima, Senior Pharmacy Intern
Jefferson Medical College Hospital, Philadelphia

SURVEY OF GRADUATE STUDENTS MAJORING IN HOSPITAL PHARMACY

In any conscientious effort to improve a course of study, the views of the student as well as that of an instructor must be heard. Instructors can prepare any number of wonderful courses, yet it is the students who have taken the course that gives its final practical evaluation. With this in mind along with several surveys previously reported in this section, a survey was conducted among graduate students majoring in Hospital Pharmacy who recently completed their studies or who are in their final year of study. Some twenty persons falling in this category were contacted of which fifteen replies to the questionnaires have been received.

Much of this material has already been presented by Mr. Herbert L. Flack. Chief Pharmacist at the Jefferson Medical College Hospital in Philadelphia, at the annual convention of the American Pharmaceutical Association held this year at Jacksonville, Florida and again at the institute on hospital pharmacy held this fall at Chicago, Illinois. With few very minor additions and corrections, this editor herewith presents the findings of that survey.

The major questions asked in the survey were:

> If you were serving on the committee to recommend a specific curriculum for graduate study in Hospital Pharmacy, what courses would you recommend be taken at college?
>
> What length of time would you recommend for the graduate study and for the internship?
>
> Would you recommend that graduate study be taken concurrently with internship in a Hospital Pharmacy?
>
> What should be included in the period of internship?

The following is a summary of the replies to the survey of graduate students majoring in hospital pharmacy:

1. Age range was from 23 to 40 with majority between 24 and 28 years of age.

2. Ten were men and five were women with five married and ten single.

3. Reasons for entering the course vary from increasing the range of job possibilities to a feeling that they would be better prepared to meet competition in hospital practice if they had a Master's Degree.

4. Salary: Majority desired $5,000 with one estimate reaching $6,000 per year.

5. Plans on graduation: Five will continue work toward a Ph.D. degree. (This is of interest because out of all persons practicing in Hospital Pharmacies only about two per cent hold the Ph.D. degree).

The remainder desired responsibilities of a chief pharmacist or the opportunity to teach in conjunction with the position of a chief pharmacist.

6. Recommended courses were:

a. Hospital Pharmacy Administration with emphasis on purchasing, inventory control, personnel relations, and department planning.

b. Manufacturing including special technics and problems, allergenics, product formulation, sterile products preparation including work in advanced medicinal bacteriology and covering preparation of both large and small volume parenterals.

c. Advanced Pharmacology to be taken with the medical students if there is an associated medical college.

d. Research in the problems of hospital pharmacy practice.

e. Biochemistry to be taken with the medical students if possible.

f. Some of the minor courses were

teaching methods and experience and Quantitative Medicinal Analysis.

7. Time for graduate study:

a. Those serving internship concurrent with graduate study: Majority favor the concurrent plan with equal time spent on internship and graduate study.

b. Those currently taking just one year of graduate study with internship to be taken later: Majority favor the concurrent plan.

8. Recommended instruction during internship:

a. Administrative procedures (great emphasis recommended on this).

b. Comparative study of hospitals in which definite periods of affiliation with other hospitals is provided.

A course following the pattern of this recommendation is offered at the Philadelphia College of Pharmacy and Science in cooperation with the Jefferson Medical College Hospital under the title "Hospital Pharmacy Survey". The course provides group trips to other hospitals in Philadelphia and vicinity and special planned trips for specific interns during which period the interns are given an opportunity to work for a period of time in other hospitals under a rotating schedule of activities. From personal experience I have found this type of a course to be one of the most educational features of my internship period.

c. Regular seminars or conferences to keep interns as well as staff pharmacists abreast of the latest advancements and new products in pharmacy and in hospital administrative practice.

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HOSPITALS CONDUCTING INTERNSHIPS IN HOSPITAL PHARMACY

In the May-June issue of this publication the editor mentioned that a number of surveys pertaining to internships in hospital pharmacy were being conducted to determine the extent and types of courses offered by the various programs and the possible recommendations for improvement. At that time the information on only the graduate academic instruction in hospital pharmacy practice was completed in time for inclusion in THE BULLETIN. This information giving the length, type, hospital affiliation, and the financial considerations of the programs was presented in chart form showing eight schools of pharmacy currently offering graduate instruction in hospital pharmacy.

The chart presented in this issue shows the information on pharmacy internships in hospitals which are not affiliated with the schools of pharmacy mentioned above. This information was tabulated from the survey conducted by Mr. Herbert L. Flack of Jefferson Medical College Hospital in Philadelphia with the assistance of the Division of Hospital Pharmacy of the American Pharmaceutical Association in Washington. Approximately a thousand self-addressed questionnaire cards were sent to active members of the American Society of Hospital Pharmacists throughout the nation with each member representing a hospital. A 41 per cent return was obtained and the list of internships in hospital pharmacy compiled from this survey is currently the most complete information available on this subject.

The results of the survey show that six hospitals offer formal internships in hospital pharmacy. By formal internship it is meant that the course is officially announced and offers a detailed period of on-the-job training combined with a formal series of lectures given in the hospital pharmacy. Nineteen hospitals offer an informal internship program and this number includes several Catholic institutions that intern only sisters of their own order. Several hospitals offer laboratory instruction to undergraduate students or to apprentices, but these have been excluded from this chart.

SEE CHART ON NEXT PAGE

HOSPITALS CONDUCTING INTERNSHIPS IN HOSPITAL PHARMACY

Name of Hospital City & State Chief Pharmacist	Formal Informal	Period of Training	Remunerations	Number of Interns Trained From - To -	Number Enrolled at Present	Maximum Number Accommodated
Duke Univ. Hosp. Durham, N. C. I. T. Reamer	F	1 Yr.	Maintenance and $1800 per year	1940 - 49 10	3	3
Huron Rd. Hosp. Cleveland, Ohio Gertrude Horsch	F	1-2 Yr.	Full maintenance plus salary	No reply	0	2
St. Luke's Hosp. Cleveland, Ohio Evlyn Gray Scott	F	1 Yr.	Maintenance, Hosp. Insurance & $50 per month	1940 - 47 10	0	4
Univ. Hosp. of Cleveland Cleveland, Ohio Robert Stockhaus	F	1 Yr.	Complete Maintenance Plus $30 per month	Started 1931 1942 - 49 7	0	2
Mercy Hosp. Toledo 2, Ohio Sister Mary John	F	1-2 Yr. as Preferred	$1 per hour on duty. Allowed time for Col. work if desired	1946 - 49 4	3	3
Freedmen's Hosp. Washington, D. C. John S. Mitchell	F	1 Yr.	Cash $100/Mo. $1560 per year. Small deduction for maintenance	Started July 1 1949	2	2
Queen of Angels Hospital Los Angeles, Calif. Sister M. Junilla	I	1 Yr.	$1.30 per hour 40 hours per week	1948 - 49 2	2	3-4
Grace-New Haven Community Hosp. New Haven, Conn. John Zugich	I	1 Yr.	$38 per week	1948 - 49 1	1	2
Evangelical Deaconess Hosp. Detroit, Michigan Jane Rogan	I	1 Yr.	75¢ per hour	1948 - 49 1	0	2
Receiving Hosp. Detroit, Michigan Paul Cole	I	1 Yr.	$50 per month	0	0	4
Saginaw General Hospital Saginaw, Michigan K. C. Anderson	I	1 Yr.	Open	0	0	1
Missouri Pacific Hospital St. Louis, Mo. F. M. Rudi	I	2 Yr.	$75 per month	1948 - 49 2	2	2
The Mercer Hosp. Trenton, N. J. E. Friedman	I	1 Yr.	75¢ per hour	1948 - 49 1	-	2

Continued on next page.

HOSPITALS CONDUCTING INTERNSHIPS IN HOSPITAL PHARMACY
(Continued)

Name of Hospital City & State Chief Pharmacist	Formal Informal	Period of Training	Remunerations	Number of Interns Trained From - To -	Number Enrolled at Present	Maximum Number Accommodated
St. Mary's Hosp. Brooklyn, N. Y. Sister Mary Etheldreda	I	1 Yr.	Voluntary service, Full maintenance	1948 - 49 1	1	2
St. Catherine's Hospital Brooklyn, N. Y. Sister M. Rose Columbia	I	-	-	1947 - 49 1	1	1
Watts Hospital Durham, N. C. Hunter L. Kelly	I	1 Yr.	$50 plus maintenance	-	0	1
Rex Hospital Raleigh, N. C. H. G. Price	I	1 Yr.	$150 per month plus maintenance	1948 - 49 1	1	1
N. C. Baptist Hosp. Winston-Salem, N.C. E. W. Rollins	I	1 Yr.	$150 per month plus maintenance	1945 - 49 2	1	2
St. Joseph's Hosp. Milwaukee, Wis. Sister M. Agnese	I	1-2 Yr. Females Only	Prevailing Hospital Pharm. wage	0	0	1
Mercy Hospital Baltimore, Md. Sister M. Carmel	I	-	-	-	-	-
Mercy Hospital Oshkosh, Wis. Sister M. Emmelia Fischer	I	1 Yr. Own Sisters Only	-	0	0	1
St. Joseph's Hosp. St. Paul, Minn. Sister Alice	I	1 Yr.	-	-	0	-
U. S. Marine Hosp. Seattle, Wash. Ronald Esson	I	2 Months	None	Started 1949	2	2
The Reading Hosp. Reading, Pa. Vance Brumbaugh	I	6-12 Months	$130 per month	0	2	2
St. Elizabeth Hosp. Elizabeth, N. J. Sister Marion	I	6 Months Sisters 12 Months	$150 per month	1	0	1

NOTES AND SUGGESTIONS

EDITED BY GEORGE L. PHILLIPS

ASSISTANT CHIEF PHARMACIST
UNIVERSITY HOSPITAL, ANN ARBOR, MICHIGAN

AMPUL GRADE THIAMIN CHLORIDE

A specially prepared thiamin chloride intended for use in ampuls is now available from Merck and Company and Hoffman-LaRoche, Inc. This improved ampul grade thiamin chloride is especially valuable for preparing ampuls of high concentrations of straight thiamin or combinations with other members of the B-Complex. For further information address Merck and Company, Rahway, N. J. or Hoffman-LaRoche, Inc., Nutley 10, N. J.

BUROW'S BASE POWDER

To improve the stability of Burow's Solution prepared from Burow's Base Powder (Wise) the following procedures have been suggested.

1. Allow 24 hours to elapse after dissolving the Burow's Base Powder in water before adding acetic acid.
2. Allow 12 hours to elapse after adding the acetic acid before filtering.
3. Have all storage and manufacturing containers involved in the production of the Burow's Solution sparkling clean to prevent a film of fine crystals which would tend to "seed" or induce the formation of a precipitate.

Burow's Base Powder is available from Irving Wise & Company, Inc., 47 Ann Street, New York 7, N. Y.

STAIN REMOVAL FROM HOSPITAL LINENS

An excellent article on removing all types of stains from hospital linens appears in Hospital Topics and Buyer (July 1948) page 16 through 20. This article is a compilation of a series of articles on stain removal written by Gus Becker for The Laundryman. Stain removal is of especial importance to the hospital pharmacist as he is so often called upon to render professional advice to his hospital laundry department usually to assist in the removal of stubborn medicinal stains.

Typical excerpts from the article follow:

1. Chewing gum or adhesive tape - remove with carbon tetrachloride or naphtha.
2. Argyrol and other silver salts - apply Lugol's Solution and, after penetration, a saturated solution of sodium thiosulfate and finally ammonia water.
3. Balsam of Peru - immerse in oleic acid, follow with boiling alkali bath and bleach. May also be removed by rubbing with acetone, ether, or alcohol.
4. Gentian violet - wash out with acidulated alcohol and follow with hot rinses and bleach. An alternate method consists of dipping in an oxalic acid-sodium thiosulfate solution then follow with rinse and bleach.
5. Medicinal stains of an unknown nature should be approached with caution. Acidulated alcohol is often helpful in dissolving or lightening the stain. Hot glycerine is a good agent to rub into medicinal stains before washing and bleaching.
6. Methylene Blue - remove with warm alcohol followed by bleaching.
7. Ointments - soak stains in a 50-50 mixture of carbon tetrachloride and naphtha for one hour, then rub the spots, squeeze and soak in alkaline solution. Follow with rewashing.
8. Silver Nitrate - to remove, drop tincture of iodine on spot, let penetrate for conversion to silver iodide. Then treat with sodium thiosulfate. A small cloth bag filled with thiosulfate crystals and dipped in ammonia is used to advantage.
9. Waxes such as paraffin can be removed by placing a warm iron on top, and a white paper blotter under the spot. The melted wax is absorbed by the blotter.

PURDUM-GREGOREK SOLUTER AVAILABLE

Development of the Purdum-Gregorek Soluter offers hospital pharmacists an economical labor-saving device for diluting penicillin and other antibiotics. The Soluter is described as safe, simple, accurate and economical. Savings realized by reducing syringe and needle breakage will more than pay for the Soluter during the first year of use in institutions of moderate size.

This device, illustrated above, is a hand-operated semi-automatic machine used for the introduction of a sterile diluent into sterile, rubber-capped vials, such as those containing penicillin and streptomycin. The illustration shows a 20 cc. Luer-Lok syringe in the assembly, although any size syringe up to 50 cc. in capacity may be used. Attached to the tip of the syringe is a three-way valve, which in turn, has attached to it a special air-vent needle and a rubber tube leading to the flask of sterile diluent. An air vent needle is used so that fluid introduced into the vial may displace rather than compress the air therein. Two coil springs are used to raise the plunger of the syringe, and there is an adjustable stop for the plunger which can be set for any desired volume. The platform on which the vial is placed includes a centering device so that the needle will always strike the rubber diaphragm of the cap. When the hand lever on the right of the machine is pushed downward, the vial rises to the proper height with the needle inserted through the stopper. When in this position, the plunger of the syringe is then pushed down forcing the fluid from the syringe into the vial. The vial is then lowered by raising the hand lever, the plunger is released, and the syringe again fills to the proper volume. A vertical shaft attached to the platform on which the vials are placed activates the valve which controls the passage of liquid from flask to syringe and from syringe to vial.

The Soluter was developed by Dr. W. A. Purdum and Mr. F. J. Gregorek of the Johns Hopkins Hospital Pharmacy in their efforts to simplify the problem of preparing the hundreds of sterile dilutions required daily in the hospital. It is available from the Baltimore Biological Laboratory, Inc., 1640 Gorsuch Ave., Baltimore 18, Maryland. Literature will be sent on request.

DRUG AND CHEMICAL DIRECTORY

A 1500 page indexed directory of suppliers of chemicals, oils, drugs, gums, waxes and related materials known as the Green Book is supplied without charge to subscribers to the weekly Oil, Paint and Drug Reporter. The Reporter follows the drug and chemical market very closely giving weekly quotations on a large number of drugs and chemicals. United States subscription rate is $5.00 per year. Address the Schnell Publishing Company, Inc., 59 John Street, New York 7, N. Y.

EQUIPMENT DIRECTORY

The Drug and Cosmetic Review published semi-annually provides an invaluable index to manufacturers of handling and processing equipment designed for the drug industry. A copy of this Review as well as a subscription to the monthly Journal of the Drug and Cosmetic Industry should prove helpful to all of you contemplating extensive hospital pharmacy manufacturing. Many useful formulas and articles also make this journal a top-notch publication. Write to Drug & Cosmetic Industry at 101 West 31st Street, New York 1, N.Y.

AMPHETAMINE SULFATE

Amphetamine sulfate powder will be available very soon. At least one company is taking orders now for delivery in the near future. Cost is estimated to approximate $8.50 per pound. For those of you who make your own tablets that will mean that the 10 mg. tablet of amphetamine sulfate may be produced at about $0.30 per thousand. For further information write to B. L. Lemke & Company, Inc., Lodi, N. J.

Institute On Hospital Pharmacy

CHICAGO - AUGUST 1949

CATHCART - GDALMAN - SISTER MARY JOHN - LOVELL - PHILLIPS

BECK - BOWLES - CATHCART - HANSEN

Hospital pharmacists from 28 states and Canada attended the fifth Institute on Hospital Pharmacy held on the University of Chicago campus during the week of August 29. Members came from as far West as California and South from Florida representing hospitals ranging from 50 beds to 1000 beds. Hospital representation by bed capacity was as follows: 3 from hospitals less than 100 beds; 31 from 101-200 beds; 33 from 201-300 beds; 14 from 301-400; 6 from 401-500; 18 from 501-1000; and 10 from hospitals over 1000 beds. Of the total 121 persons enrolled in the institute, 116 were practicing hospital pharmacists. Thirty of the enrollees were from government hospitals and 84 from non-profit general hospitals. Statistics on hospital representation by type of service show that 111 were from general hospitals; one from nervous and mental hospitals; and 3 from special hospitals. Additional statistics reveal that approximately one-half of the student body were men and one-half women, of which 14 were Catholic Sisters.

Again sponsored by the American Hospital Association, the American Pharmaceutical Association and the American Society of Hospital Pharmacists with Dr. Charles T. Dolezal, Assistant Director of the A.H.A., as institute coordinator, this meeting offered much to hospital pharmacists toward bringing them up-to-date on new trends in the field as well as the opportunity to exchange ideas with more than 100 colleagues having similar problems. The program was especially designed to aid the hospital pharmacist to meet his responsibilities in the management of his pharmacy. New ideas, practical demonstrations and exhibits were all a part of the program with an ultimate aim to help provide better pharmaceutical services to hospital patients.

Ideal facilities at Burton-Judson Dormitory provided an atmosphere conducive to a week of concentrated study. Housing and food were provided at the dormitory as well as meeting rooms. Lectures, discussion periods and demonstrations were held each day and evening throughout the week with a final luncheon and awarding of certificates Friday noon.

Greetings from each of the sponsoring organizations officially opened the institute. Dr. Dolezal welcomed the enrollees and commented on the services of the American Hospital Association and its interest in promoting institutes. Mr. Ray Brown, Superintendent of the University of Chicago Clinics and chairman of the Committee on Local Arrangements, presented greetings on behalf of the University of Chicago. In the absence of Dr. Robert P. Fischelis, secretary of the American Pharmaceutical Association, Mr. George Archambault of the U. S. Public Health Service in Washington, presented a message from Dr. Fischelis on behalf of the A.Ph.A. He spoke of the pharmacist's responsibilities in the hospital and the interest which the A.Ph.A. has in hospital pharmacy. "To the extent of its resources," Dr. Fischelis said, "the Association intends to continue to support the advancement of pharmacy on all of the frontiers of medical service. It hopes that the hospital pharmacists, who are perhaps closer to the practice of medicine than any other pharmaceutical group, will rise to the responsibilities which their environment presents. It hopes also that hospital administrators and other managing officials, as well as the medical profession, will recognize the contribution which American pharmacy is making to the improvement of medical care, especially through the activities of hospital pharmacists."

Herbert L. Flack, president of the American Society of Hospital Pharmacists presented greetings from the Society and outlined some of the objectives for the current year. Mr. Louis Gdalman, president of the Illinois Chapter of the A.S.H.P., welcomed the students on behalf of the local group and told of some of the plans for the week.

Dr. Otis L. Anderson, Assistant Surgeon General, Associate Chief, Bureau of Medical Service, U.S. Public Health Service, Washington, presented the opening address on "Responsibility of the Hospital Pharmacist in Public Health and Preventive Medicine". He urged pharmacists to recognize their responsibility as members of the medical team in the hospital and the contribution they can make in public health education. See this issue of THE BULLETIN, page 215, for complete paper.

Dean E. R. Serles of the University of Illinois School of Pharmacy, discussed "Responsibilities of the Hospital Pharmacist" in which he outlined specific duties of the pharmacist including those related to purchasing, dispensing, manufacturing, therapeutics committee, library, and ward and drug stations. He emphasized the importance of the therapeutics committee and further that the pharmacist be a member of the committee and have a vote. He urged familiarity with all hospital departments. In conclusion, Dean Serles stated that "the pharmacy should not be considered as a service unit in a hospital . . . It should be organized as a professional department, with its staff members assuming full responsibility for all pharmaceutical procedures, whether they originate from the ward drug stocks, or within the dispensing and manufacturing unit of the pharmacy itself".

Devoting some time to personnel relations in the hospital,

RAY E. BROWN

DR. OTIS L. ANDERSON

HANS S. HANSEN

SOPHIE ZIMMERMAN

two phases of the field were covered--1. "The Pharmacist's Relationships in the Hospital" by Hans S. Hansen, Administrator of Grant Hospital in Chicago; and 2. "Human Relations in the Hospital" by Mrs. Sophie Zimmerman, Personnel Relations Department, University of Chicago Clinics.

Mr. Hansen covered the relationships with other professional departments in the hospital and the business and administrative offices. Suggesting that we base our relations on the golden rule, he discussed the pharmacist in relation to the medical staff, to the nursing staff and to the departments of pathology, radiology, anesthesiology and others as well as with the business office and administration. In summary he emphasized that the pharmacist has the following relationships which should be on a basis of cooperation for the benefit of the patient and the hospital's increased value to the community which it serves: 1. That of a professional colleague; 2. That of a teacher; 3. That of a business associate and 4. That of responsibility and accountability.

Under "Human Relations in the Hospital" with special application to the pharmacist, Mrs. Zimmerman gave a formula for happiness pointing out the three major factors to be considered in arriving at happiness and adjustment--security, recognition and expression.

"The Application of Pharmacy Laws to the Hospital" was presented by Mr. Samuel Shkolnik, Legal Counsel, Illinois Pharmaceutical Association, Chicago. The hospital pharmacists' legal responsibilities under the federal and state statutes were discussed followed by many questions from the floor. Mr. Shkolnik discussed the Food, Drug and Cosmetic Act and the Harrison Narcotic Act in detail, emphasizing that the legal rights and responsibilities of hospital pharmacists are the same as those of any pharmacist.

The Tuesday morning session was devoted to therapeutics with Dr. C. Wesley Eisele, Associate Professor of Medicine, University of Chicago, speaking on "The Use and Misuse of Drugs in Hospitals" and Dr. Austin Smith, Secretary, Council on Pharmacy and Chemistry of the American Medical Association discussing "New Drugs" and Their Uses, Including Antibiotics". Dr. Eisele listed some of the more common ways in which drugs are misused in many hospitals--ordering too large floor stocks, hasty treatment without complete diagnosis, and use of potent antibiotics for minor illnesses. He further cited figures on the average cost of drugs to hospital patients. According to one study of 2000 hospitalized patients, Dr. Eisele stated that the average cost of drugs per day was $1.10 which was 35 per cent of all extra charges to the patient.

Dr. Smith discussed specific trends in therapy in effect today, bringing the group up-to-date on current therapeutic problems. The various classes of diseases were covered and the drug of choice for treating each was indicated.

Representatives of the government services were present on Tuesday afternoon to discuss pharmacy in the Public Health Service, the Navy, the Veterans Administration and the Army. Commander W. Paul Briggs, MSC, U. S. Navy, led the panel introducing George F. Archambault, who presented an explanation as to the need for a commissioned corps of public health specialists, the position pharmacists occupy in the corps and a brief discussion of the major projects instituted in Marine Hospitals during the past year. Colonel Othmar F. Goriup, Chief of the Medical Service Corps, U. S. Army, described the pharmacy program being carried out by the Army. Mr. E. Burns Geiger, chief of the pharmacy service in the Veterans Administration, explained the details under the over-all reorganization program of the Veterans Administration.

"Training Programs and Pharmacy" and "The Teaching and Interprofessional Relations Responsibilities of the Hospital Pharmacist" were presented by Mr. Herbert L. Flack. Under internships, he presented an outline covering the purpose of internship programs, a review of existing training programs

LOUIS GDALMAN

DR. AUSTIN SMITH

DR. C. WESLEY EISELE

in hospital pharmacy, choice of students or applicants for internships, basic concepts of or premises for the chief pharmacist desiring to offer intern training in his department, value of graduate instruction concurrent with internship, departmental resources required, references for outlines for internship or graduate study in hospital pharmacy, and suggestions for additional material to be offered in such training programs. Under interprofessional relations, Mr. Flack pointed out the various ways in which the pharmacist can promote better professional relations. He also showed bulletins published by pharmacists for the medical staff.

A panel on "Planning and Equipping the Hospital Pharmacy in Hospitals of Varying Sizes" included the following subjects and speakers: "Planning the Pharmacy" by Sherman W. Morrison, Wesley Memorial Hospital in Chicago; "Equipment for Solids, Liquids Handling and Parenteral Preparations" by George L. Phillips, University Hospital, Ann Arbor, Michigan; and "Fixtures, Storage Facilities and Materials Handling Equipment" by Edith G. Bactowsky, Jefferson Medical College Hospital, Philadelphia. Equipment was demonstrated and literature on equipment, fixtures, etc. was available.

GEORGE PHILLIPS

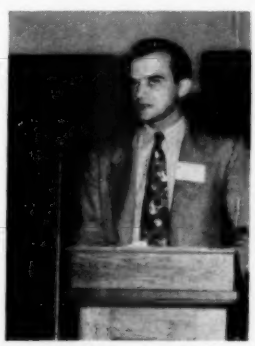
MANUFACTURING

Wednesday's program was devoted to various phases of manufacturing in the hospital pharmacy. Opening the meeting Mr. Louis Gdalman, St. Luke's Hospital, Chicago, discussed "The Economy of Manufacturing Pharmaceuticals Relative to the Bed Capacity, Type of Service and Other Factors within the Hospital". He reviewed the literature published on this subject comparing the savings accrued in hospitals of various sizes and types.

Mr. Russell Lovell, Akron City Hospital, Akron, Ohio, outlined the procedure, equipment used, personnel required, etc. for manufacturing large volume parenteral solutions in his hospital. He also gave specific figures on savings by manufacturing such preparations.

Formulas for preparation of small volume parenteral solutions were presented by Mr. George Phillips with a discussion of manufacturing and packaging procedures.

In a paper on the advantages of placing the Central Sterilizing Department under the supervision of the pharmacist, Sister Mary John, Mercy Hospital Toledo, concluded that if the Central Sterilizing Department is in close proximity to the Pharmacy and if both departments are adequately staffed,



RUSSELL LOVELL

SHERMAN MORRISON

EDITH BACTOWSKY

SISTER MARY JOHN

it is the most logical arrangement both from an efficient and economical standpoint for them to be under the supervision of the pharmacist.

"The Manufacture of Miscellaneous Pharmaceuticals and Other Preparations" by J. R. Cathcart gave those attending the institute an opportunity to learn the many possibilities for manufacturing in the Pharmacy, thus saving much for the hospital. A list of practical formulas prepared by Mr. Cathcart was available for the students.

The session on "Time-Saving Devices for the Hospital Pharmacy" offered an opportunity for the exchange of ideas, practical demonstrations of ingenious time- and labor-saving devices, and exhibits. Many of the members attending the institute took part in this program.

The Workshop on Hospital Pharmacy Administration and Policy on Thursday offered members of the institute a chance to take part in discussions on one of the following subjects--1. The Therapeutics Committee and the Hospital Formulary; 2. Who Should Purchase for the Hospital Pharmacy? 3. Out-Patient Pharmacy Policy with Respect to Quantity on Refills; or 4. Charges for Drugs. Following the discussions, a summary from each group was presented to a panel of two hospital pharmacists and two hospital administrators.

Other subjects covered during the Institute included: "Research in Hospital Pharmacy" by Don E. Francke; "Manifestations and Treatment of Addiction to Narcotic and Barbiturate Drugs," by Harris Isbell, M.D., Director of Research, U. S. Public Health Service Hospital, Lexington, Ky.; and "Radioactive Isotopes in Diagnosis and Therapy," by Leon O. Jacobson, M.D., Associate Professor of Medicine, University of Chicago Clinics.

PUBLIC HEALTH SERVICE PHARMACISTS ATTENDING INSTITUTE

VETERANS ADMINISTRATION PHARMACISTS ATTENDING INSTITUTE

INSTITUTE PHOTOS

Enrollees at Institute on Hospital Pharmacy, Chicago, 1949. . .

Enlargements of these photos may be obtained by mailing the proper amount in check or money order to Mr. Herbert Flack, Jefferson Medical College Hospital, Philadelphia. Indicate the photo you wish and include complete name and address for return to you. Please do not send cash or stamps. Prices - 5 x 7--45¢; 8 x 10--65¢.

THE VETERANS ADMINISTRATION PHARMACIST

Edited by Eddie Wolfe, Chief Pharmacist,
Mt. Alto Veterans Hospital, Washington, D. C.

Final action to acquire a site for a 500-bed general medical and surgical hospital in Atlanta, Georgia, has been initiated by Carl R. Gray, Jr., Administrator of Veterans Affairs, V.A. announced.

The Dean's Committee of Emory University Medical School will cooperate with V.A. in staffing the hospital, assuring the highest type of medical care for sick and disabled veterans.

Construction will be started as soon as possible. Cost is estimated between eight and nine million dollars.

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KECOUGHTAN VETERANS FACILITY

Mr. L. J. Dixon, Chief Pharmacist, Kecoughtan Veterans Facility, explains the merits of the uniform set of bottles and jars in the ward medicine cabinet to Miss Quarles, Charge Nurse.

All bottles and jars are alphabetically arranged. Capsules and tablets are placed in six ounce powder jars and sixteen ounce clear bottles are used for liquids. This arrangement presents a neat and professional appearance to the cabinets and also allows for a minimum loss of time when seeking medications.

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DEARBORN VA HOSPITAL

Mr. A. W. Davidson, Chief Pharmacist at the Dearborn VA Hospital in Michigan, lectures to a group of nurses on the latest medications available from the pharmacy. The Dearborn Hospital is one of the larger VA institutions; and has the pharmacy located in a convenient location to the other departments and the outpatient clinic.

* * * * * * * * *

POSITIONS in hospital pharmacy

POSITIONS OPEN

FLORIDA . . . Pharmaceutical Chemistry: Professor for graduate courses and directing M.S. and Ph.D. research. New space and equipment. Adequate support. Teaching and industrial experience preferred. Excellent salary for demonstrated ability. Attractive climate and small city. Appointment any time before September 1950. Dean, College of Pharmacy, University of Florida, Gainesville, Florida.

From Science 110:22 (September 23, 1949)

ILLINOIS . . . Position for pharmacist open at Evanston Hospital, Evanston, Illinois. Salary open. 44 hour week, hospital experience most desirable. For further information write to Mr. A. B. Cook, Administrator.

The following openings in hospital pharmacy appeared in the October issue of Hospitals, page 142. Anyone interested in the positions should write directly to the agency indicated. A fee is charged when positions are secured through the services of a personnel agency.

PHARMACISTS—(a) Chief; 300-bed hospital, expansion program; university town; minimum $4200. (b) General hospital, 250 beds; winter resort city, Southwest. H10-13 - The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11, Ill.

PHARMACIST—125-bed Pa. 25-bed addition being completed. Salary open. Maintenance. Medical Personnel Exchange, 4707 Springfield Ave., Philadelphia 43, Pa.

POSITIONS WANTED

1. MIDWEST . . . Young pharmacist, registered in Wisconsin would like position, preferably in hospital in small city in the Midwest. Has had almost two years' experience in charge of a small hospital pharmacy and two years' experience teaching pharmacology to student nurses. Also has served as hospital purchasing agent for the past six months. If interested, submit letter of application to the Editor of THE BULLETIN giving education, experience, etc.

2. Woman pharmacist licensed in the state of California since 1920 interested in position as chief pharmacist in hospital. Would be particularly interested in setting up new pharmacy department. Has had varied experience in hospital pharmacy. If interested, write to Miss Sophie Feider, 1830-1/4 Lucile Avenue, Los Angeles 26, Calif.

3. Mr. W. E. Chandler, 121 S. Seminole Street, Wewoka, Okla. is interested in position in hospital pharmacy. For further information write directly to Mr. Chandler.

ANNOUNCEMENT OF REGULAR CORPS EXAMINATION FOR PHARMACISTS
United States Public Health Service

A competitive examination for appointment of Pharmacists in the Regular Corps of the United States Public Health Service will be held on March 6, 7, and 8, 1950. Examinations will be held at a number of points throughout the United States, located as centrally as possible in relation to the homes of candidates. Applications must be received no later than January 23, 1950.

The Regular Corps is a commissioned officer corps composed of members of various medical and scientific professions, appointed in appropriate categories such as medicine, dentistry, pharmacy, and the sciences. All commissioned offi-

cers are appointed to the general service and are subject to change of station as the exigencies of the Service may require.

Appointments will be made in the grades of Junior Assistant Pharmacist (equivalent to Army rank of Second Lieutenant), Assistant Pharmacist (equivalent to First Lieutenant), and Senior Assistant Pharmacist (equivalent to Captain). Appointments are permanent and provide an opportunity for qualified pharmacists to pursue their profession as a life career in the Service. Assignments will include the fields of hospital pharmacy, pharmaceutical research, public health programs, medical supply, and quarantine inspection and will be made with all possible consideration of the officer's demonstrated abilities and experience. There will be ample opportunity for professional growth and development.

Requirements:

Junior Assistant Pharmacist:

(1) United States citizenship.
(2) Graduation from a school of pharmacy accredited by the American Council on Pharmaceutical Education.
(3) Licensure to practice in a state, territory, or the District of Columbia. (An applicant who holds a temporary, provisional, conditional, or no license from a state requiring practical experience before formal registration, will be admitted to the examination and if successful will be considered for appointment after full licensure is established).

Assistant Pharmacist

In addition to the requirements listed for Junior Assistant, candidates must have had an additional three years of post graduate professional training or experience.

Senior Assistant Pharmacist:

In addition to the requirements listed for Junior Assistant, candidates must have had an additional 6 years of post graduate professional training or experience.

Senior students of accredited schools of pharmacy will be permitted to take the examination for the Junior Assistant grade and those who successfully pass the examination will be considered for appointment after their graduation and licensure.

The examination will include an oral interview, a physical examination, and written objective tests covering the professional field. The written professional examination will be given March 6, 7, and 8, and will include: Practice of Pharmacy; Pharmaceutical Chemistries; Physiology and Pharmacology; Pharmacy Administration, and Bacteriology and Public Health.

Oral interview and practical dispensing demonstration. In its discretion the Examining Board may require the performance of a practical dispensing demonstration in pharmacy. The oral interview (and practical dispensing demonstration if required) will be given as soon as practical after the written examination.

Gross pay is governed by the Career Compensation Act of 1949, and is identical to that of officers of equivalent rank in the Army and Navy. Under current law, entrance pay for a Junior Assistant Pharmacist with dependents is $3969 per annum; for Assistant Pharmacist, $4486.56 per annum; for Senior Assistant Pharmacist, $5346 per annum. These figures include subsistence and rental allowance.

Promotions: Provisions are made for promotion at regular intervals up to and including the grade of Pharmacist (Major) and for promotion by selection to the grade of Senior Pharmacist (Lt. Col.) and Pharmacist Director (Col.).

Retirement pay after 30 years of service or at the age of 64, is three-fourths of annual basic pay at the time of retirement. Retirement for disability is authorized under the Career Compensation Act and disability retirement pay will generally not be less than one-half of the annual basic pay at the time of retirement.

Additional benefits include 30 days annual leave, sick leave, full medical care, and many of the usual privileges extended to members of the military forces.

Application forms and additional information may be obtained by writing to the Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C., attention: Division of Commissioned Officers. Applications received after January 23, 1950, will not be accepted.

TIMELY DRUGS

NISULFAZOLE - EURAX CREAM - PANPARNIT HYDROCHLORIDE - AUREOMYCIN (INTRAVENOUS) - GANTRISIN - RONIACOL TARTRATE

NISULFAZOLE . . . a sulfonamide, is now being made available to the medical profession for the first time in a 10 per cent suspension by George A. Breon & Co. for the treatment of nonspecific chronic ulcerative colitis.

EURAX CREAM . . . is a new compound used to treat scabies which has been used clinically with distinct advantages over older methods. The active constituent is N-ethyl-o-crotonotoluide. Eurax is reported to be non-toxic and non-irritating in the recommended dosage and to relieve scabietic itching promptly. In addition it has a marked bacteriostatic action on staphylococci and streptococci, thus providing an important therapeutic advantage in cases of scabies complicated by secondary skin infections. Report of the clinical work appears in J. Invest. Dermatol. 13:35 (July 1949) in which seventy cases of scabies treated with a 10 per cent ointment showed 100 per cent cure.

A prescription product, Eurax is supplied in 60 gram tubes and one pound jars containing 10 per cent of the active ingredient in a vanishing cream base by Geigy Company, Inc., Pharmaceutical Division, 89-91 Barclay Street, New York City.

PANPARNIT HYDROCHLORIDE . . . is the name under which "Parpanit" will be commercially available in the near future from Geigy Company, Inc. A muscle relaxant, Panparnit has been used successfully in the treatment of Parkinson's Disease. (See THE BULLETIN 6:134, May-June, 1949.) Original references to the pharmacological and clinical studies using this drug appear in the J. Pharmacol. Exp. Therap. 96:11 (May, 1949) and the J. Am. Med. Assoc. 139:629 (March 5, 1949). According to the latter reference, Parpanit was found superior to previous types of medications in 65 per cent of the cases when it was used to treat 50 patients having Parkinson's disease. This drug will be available in tablet form.

AUREOMYCIN (INTRAVENOUS) . . . is now available from Lederle for patients who cannot take the drug orally. It should be used only for emergencies since thrombophlebitis frequently follows intravenous administration. Aureomycin for injection is available in multiple dose vials containing 100 mg. with an accompanying vial containing 10 cc. of leucine 2.6 per cent to serve as diluent.

GANTRISIN . . . a new sulfonamide recently made available by Hoffmann-La Roche, Inc. offers certain advantages because of its high solubility over a wide pH range and its therapeutic efficacy. According to results so far, Gantrisin has been effective against urinary infections, pneumonia, and some forms of meningitis.

The fact that Gantrisin is more soluble over a wide pH range than other sulfonamides eliminates the possibility of producing crystalluria and there is less danger of renal blocking. It also obviates the simultaneous use of alkali therapy.

Chemically, Gantrisin is 3,4-dimethyl-5-sulfanilamido-isoxazole. It is available in the form of oral tablets, as a palatable syrup, and in ampuls for intravenous or intramuscular injection. In the experimental studies Gantrisin was referred to as NU-445 and as Gantrosan.

RONIACOL TARTRATE . . . is a new peripheral vasodilator which is of therapeutic value in peripheral vascular diseases, such as vascular spasm, Raynaud's syndrome, Buerger's disease, endarteritis, intermittent claudication, chilblains, and migraine associated with vascular spasm. Chemically, Roniacol is the alcohol corresponding to nicotinic acid. It is distinguished from nicotinic acid by a far lower incidence of side effects; if flushing of the face and neck occurs at all, it is usually mild and does not inconvenience the patient. A significant advantage of Roniacol is that its action is much more prolonged than that of nicotinic acid. Moreover, patients are not likely to develop tolerance to Roniacol which can therefore be used over prolonged periods without requiring frequent increases in dosage. From one to four Roniacol Tartrate tablets are given one to three times daily. Roniacol Tartrate is available in scored tablets containing 50 mg. of nicotinic acid alcohol, bottles of 100 from Hoffmann-La Roche, Inc.

CURRENT LITERATURE
(Continued from page 237)

MODERN HOSPITAL

August, 1949 - "Ubiquity and Rationale of the Treatment of Pain." An excellent tabulation of painful states and specific recommended treatment.

page 98

September, 1949 - "A Formulary has Economic Value" by Hans S. Hansen. An excellent article by an administrator who understands hospital pharmacy.

page 104

"Estrogens" - Separates various preparations into recognizable groups and describes characteristics of each group.

page 106

Workshop Meetings Prove Successful

By Charles Hagan, Santa Monica Hospital, Santa Monica, California

At the recent Hospital Pharmacy Institute at Berkeley, California, a "workshop" meeting was held, which proved to be highly successful. Although THE BULLETIN described this workshop as a "new feature", the Southern California Chapter of the American Society of Hospital Pharmacists is extremely proud to state that it has been having "workshop meetings" since the beginning of 1949.

These meetings have proved to be so successful from both an educational and practical standpoint, that the Southern California Chapter has adopted them as a regular session alternating with their business meetings bimonthly.

Because of the great interest shown in our workshop meetings, we feel other groups might be interested in knowing the procedure.

At the regular business meeting, the subject matter for discussion at the following workshop meeting is chosen. The Program Chairman then appoints four group chairmen and each of these group chairmen is given a different phase of the subject chosen, as a sub-topic. Each chairman then formulates questions pertaining to his particular phase or sub-topic. At the workshop meeting, the attendance is then divided into four groups, each group retiring with a group chairman and carries on its own discussion of the questions formulated by the group chairman. These discussions are usually held for a limited time, for example, thirty minutes.

At the end of the time limit, the four chairmen (who have been taking notes during their separate discussions) sit at the presiding table, and, with the Program Chairman acting as coordinator, give an account of the results of the half-hour discussion. After each Chairman has given his report, a panel discussion among the entire assembly is then held.

The Southern California Chapter has even gone one step further, and holds each workshop meeting at a different hospital within its boundaries, so that the participants have an opportunity to see and inspect all the hospitals in the vicinity.

NEWS ITEMS

A.S.H.P. OFFICERS ELECTED

Officers-Elect of the American Society of Hospital Pharmacists for the 1950-1951 term are I. Thomas Reamer, president; Grover C. Bowles, vice-president; and Sister Mary Jeanette, treasurer. The secretary is elected at the annual meeting by the A.S.H.P. House of Delegates on the recommendation of the executive committee.

A.PH.A. ELECTION RESULTS

The American Pharmaceutical Association has announced the results of the election of officers for 1950-1951. Chosen President-Elect is Henry H. Gregg, retail pharmacist from Minneapolis, Minnesota. Other new officers include First Vice-President-Elect Roy A. Bowers, Albuquerque, New Mexico and Second Vice-President-Elect Louis J. Fischl, Oakland, California. Members-Elect of the Council for a term of three years include B. V. Christensen, Columbus, Ohio; H.A.B. Dunning, Baltimore, Maryland; and Ernest Little, Newark, New Jersey.

SISTER JUNILLA HONORED

Sister Mary Junilla, chief pharmacist at Queen of Angels Hospital in Los Angeles and treasurer of The American Society of Hospital Pharmacists, was recently honored by the Southern California Pharmaceutical Association. At the August meeting of the Association's executive board, the following resolution was passed in recognition of Sister Junilla's contributions to organizing pharmacy.

> Inasmuch as Sister Junilla, O.S.F. of the Queen of Angels Hospital of Los Angeles, California, has done much to promote the true Association spirit within the ranks of Pharmacy by being instrumental in the organization of a Co-ordinating Committee for the Advancement of Pharmacy, in organizing the Southern California Chapter of the American Society of Hospital Pharmacists and the reactivation of the Southern California Chapter of the A.Ph.A., the Executive Board of the Southern California Pharmaceutical Association in Executive session this 10th day of August, 1949 do hereby thank her for her efforts and congratulate her on her achievements, and to further show their appreciation do hereby elect her a Life Honorary Member of the Southern California Pharmaceutical Association.

ZUGICH ACCEPTS EDITORIAL POST

John J. Zugich, a past president of the American Society of Hospital Pharmacists, has been appointed editor of the Hospital Pharmacy Forum of the American Professional Pharmacist. Mr. Zugich has been active in the Society since its organization, having served as an officer and as a member of various committees, and as president of the Southeastern Society of Hospital Pharmacists. He has also contributed to THE BULLETIN as well as other pharmaceutical publications.

Mr. Zugich is a graduate of the University of Illinois College of Pharmacy and acquired practical experience in hospital pharmacy at the University of Michigan Hospital, Ann Arbor. As the pharmacist-in-chief of medical facilities at Oak Ridge, Tenn., he organized the pharmaceutical facilities for supplying medicinals to population and medical groups, including out-patient department, dispensaries, hospital, dental clinic, first aid stations, industrial sites, public health department, and many others. For the past three years Mr. Zugich has served as the Chief Pharmacist of the Grace-New Haven Hospital in New Haven, Conn.

HOSPITAL PHARMACY AT HOWARD COLLEGE

The course in Hospital Pharmacy at Howard College which is taught by Joe Vance, President of the Southeastern Society of Hospital Pharmacists and Assistant Superintendent of the South Highlands Infirmary in Birmingham, will be augmented by five visiting lecturers this year. On October 12, Mr. Arthur E. Rooney, representative of Baxter Laboratories of Atlanta, will present

"History of the Development of Intravenous Solutions"; on October 26, John L. Howell, Superintendent of the South Highlands Infirmary, will present "The Medical Staff of the Modern Hospitals"; on November 5, Mr. James C. Moore, Hospital representative of Eli Lilly, will present "Functions of the Hospital Pharmacy Compared with the Functions of the Retail Pharmacy"; on November 18, Mr. Kirk Newell, Representative of Lederle Laboratories Division of American Cyanamid will present "Biologicals Used in Hospital Pharmacy" and the final lecture on November 23 will be given by Arthur L. Bailey, Administrator of the Jefferson Hillman Hospital in Birmingham, on "The Organization and Management of the Hospital".

NORMAN BAKER ACCEPTS NEW POSITION

Mr. Norman N. Baker, formerly chief pharmacist at the Norfolk General Hospital, Norfolk, Va., has recently accepted the position as Apothecary-in-Chief at The New York Hospital. Mr. Baker is a graduate of the University of Michigan College of Pharmacy after which he was employed as an assistant pharmacist at Wayne County General Hospital, Eloise, Michigan until inducted into the Army in December, 1941. While in the Army, he was in charge of a 750-bed station hospital pharmacy in India. He was later commissioned in the Medical Administrative Corps and served as a Medical Supply Officer for a station hospital and a Depot Medical Supply Officer. Mr. Baker then served as Adjutant and Pharmacy Officer in a station hospital until his separation from the service with the rank of Captain. Upon his return to civilian life he served an 18-month internship in hospital pharmacy at the University Hospital, Ann Arbor, Michigan. Mr. Baker has been an active member of the American Pharmaceutical Association and the American Society of Hospital Pharmacists for several years.

A.PH.A. SEEKS NOMINATIONS FOR IODINE AWARD

Any member of the American Pharmaceutical Association may propose a nominee for the 1950 Iodine Educational Bureau, Inc., Research Award. The Award of $1,000 will be given to the person who, in the opinion of the Award Committee, has done the most outstanding research in the chemistry and pharmacy of Iodine and its compounds as applied in pharmacy or medicine. Nominations for the 1950 Award must be submitted to the Secretary of the A.Ph.A. on or before January 1, 1950. Hospital pharmacists may know about such research and will want to submit the name of a nominee for the Award. For additional information, write to the American Pharmaceutical Association.

CURRICULUM IN HOSPITAL PHARMACY

The following excerpt in regard to the curriculum for hospital pharmacy is taken from the "Report of the Committee on Curriculum," of the American Association of Colleges of Pharmacy as presented at the 1949 meeting in Jacksonville, Fla.

It has been pointed out that Hospital Pharmacy is the practice of professional pharmacy in a hospital. While the requirements in education are exactly the same as in the case of the retail establishment, practical experience in a hospital pharmacy will lead to the acquisition of some skills and attitudes which lead to more efficient performance. The Committee has listed some of the objectives which should be achieved in an optional group of elective courses and in-service training in hospital pharmacy.

1. Gain a knowledge of the several types of hospitals and their pharmaceutical requirements: General types both voluntary and charity: special types such as; children's, women's, eye and ear, cancer, contagious diseases, tuberculosis, etc.
2. Gain a knowledge of the organizational plans of hospitals; relationships of management and professional staff.
3. Gain a knowledge of institutional purchasing and stock control.
4. Gain experience in manufacturing and quality control of galenicals on a hospital scale.
5. Gain increased assurance in pharmacist-physician relationships.
6. Gain increased assurance in pharmacist-patient relationship.
7. Gain increased familiarity with the specialized literature of medicine and pharmacy.
8. Gain familiarity with the terminology

and purposes of surgical instruments and supplies.

9. Gain increased appreciation of the need for specialized medication and cooperative research in this field.

From the Am. J. Pharm. Ed. 13:501 (July 1949)

MINIMUM STANDARDS COMMITTEE MEETS

A meeting of the A.S.H.P. Committee on Minimum Standards was held at Johns Hopkins Hospital on October 1, 1949 with Dr. W. Arthur Purdum, chairman of the committee, presiding. Other members of the committee present included Mr. J. Solon Mordell, Washington, D. C. and Sister Mary Etheldreda, Brooklyn, N. Y. Present also were Dr. Robert P. Fischelis and Gloria Niemeyer of the Division of Hospital Pharmacy of the A.Ph.A.

The proposed minimum standards for hospital pharmacies as published in the September-October (1948) issue of THE BULLETIN were reviewed with the purpose of incorporating any changes which had been made since publication of the standards. The revised standards will be presented to the A.S.H.P. Executive Committee for final approval in the near future. Following approval by the A.S.H.P., the standards will be referred to the Division of Hospital Pharmacy of the A.Ph.A. for presentation to accrediting agencies.

UNIVERSITY OF ILLINOIS RESEARCH AND EDUCATION HOSPITALS

A total of 58,810 prescriptions were filled by the hospital pharmacy at the University of Illinois Research and Educational Hospitals during the past fiscal year according to a release from the University.

Dr. Earl R. Serles, dean of the College of Pharmacy, has reported that the number of prescriptions filled represented an increase of 13.8 per cent over the preceding year.

Department requisitions for pharmaceutical needs numbered 62,000. Dr. Serles also reported that more than 60 per cent of the patients treated at the University's hospitals during the past fiscal year received service from the hospital pharmacy.

Eighty-eight per cent of the prescriptions filled did not require extemporaneous compounding. Tablets accounted for 52 per cent, solutions 20 per cent, ampuls 12.7 per cent, ointments 3.2 per cent, and bulk powders 0.1 per cent.

Vitamins comprised 9 per cent of the prescriptions followed by penicillin 8 per cent, and narcotics 6 per cent. Sulfonamides comprised only 0.5 per cent of the prescriptions, a significant drop representing only about one fifth of the prescriptions in this category during the previous year.

Dr. Serles said that the manufacturing division of the hospital pharmacy supplied drugs under 211 different formulas. In this category, quantities ranged from a few gallons to a half ton of ointments, 2,000,000 tablets, 30,000 liters of intravenous solutions of ampuls, and 110,000 doses of test allergens.

DR. W. ARTHUR PURDUM, chief pharmacist at Johns Hopkins Hospital and formerly president of the American Society of Hospital Pharmacists, will be a guest speaker at the annual meeting of the Canadian Society of Hospital Pharmacists, which is being held in Toronto in November.

MR. PAUL T. REES, an associate member of the American Society of Hospital Pharmacists, has recently been appointed field sales manager of Bristol Laboratories, Inc. He was formerly the Washington representative and Southern sales division manager of that Company.

SISTER MARY ADELAIDE has recently been appointed administrator of St. Elizabeth Hospital in Youngstown, Ohio. Sister Adelaide is a pharmacist as well as a hospital administrator, and she is the Catholic Hospital Association's representative on the Policy Committee of the A.Ph.A. and A.S.H.P. Division of Hospital Pharmacy. She was formerly administrator of St. Joseph's Hospital in Lorain, Ohio and prior to that time was pharmacist at St. Elizabeth Hospital.

To make up a fund equivalent to the cash valuation of hospitals in 1948 (nearly $6½ billion), every man, woman and child in the United States would have to contribute $45 each.

76.8 per cent of all general hospital beds in the United States are represented in American Hospital Association membership.

Personal members of the American Hospital Association (including administrators, department heads and trustees) now number 3,498.

15,160,000 of the 16,422,000 patients admitted to all hospitals in 1949 were treated in general hospitals.

Organization News

NORTHERN CALIFORNIA SOCIETY

Thirty-six members were present at the September 13 meeting of the NORTHERN CALIFORNIA SOCIETY OF HOSPITAL PHARMACISTS meeting at Herrick Memorial Hospital in Berkeley. "Industrial Medicine" was the subject discussed by Dr. Leon Lewis of the staff of Herrick Memorial Hospital and assistant professor of Public Health of the University of California.

During the business meeting the following subjects were discussed: plans for an intensive membership drive; establishment of a job placement bureau; plans for a pricing forum to be featured at a meeting in the near future; and the new narcotic law. Letters from Dr. Plein in regard to the progress of a Northwestern affiliate of the A.S.H.P. and from Sister Junilla concerning the coordination program were read.

AKRON AREA SOCIETY

The first meeting of 1949-50 year of the AKRON AREA SOCIETY OF HOSPITAL PHARMACISTS was held at 8 o'clock at Aultman Hospital, Canton, Ohio on September 13.

Miss Jeanne Tarney announced plans for the pharmacy exhibit to be prepared by hospital pharmacists of this group and displayed at the Second Annual Nursing Education Exhibit sponsored by the Stark County Student Nurse Recruitment Committee. The exhibit will be in the Mercy Hospital Auditorium in January, 1950. The display will depict the influence of pharmacy in nursing education as well as the general role of pharmacy in the hospital.

Mrs. Ione Smith reviewed a paper on "Stable Aqueous Solutions of Streptomycin". Mrs. Smith was co-worker on this project when she was employed by Abbott Laboratories.

A discussion of the highlights of the Institute on Hospital Pharmacy in Chicago ensued.

MIDWEST ASSOCIATION

The ASSOCIATION OF HOSPITAL PHARMACISTS OF THE MIDWEST held their first fall meeting at the Lutheran Hospital, Omaha, Nebraska September 10.

Due to the transfer of Sister M. Jane Frances from St. Elizabeth's Hospital in Lincoln to Colorado Springs, Wilma Maus was elected secretary to fill in her term of office.

A program committee and an education committee were appointed. The former will provide outside speakers for meetings, while the latter will be responsible for an outline of discussions of the practical problems of hospital pharmacy to be led by one member at each meeting.

Sister M. Raphael of St. Vincents in Sioux City, Mrs. Frances Rodgers of Clarkson in Omaha and Miss Wilma Maus of Mercy in Council Bluffs attended the Institute for Hospital Pharmacists in Chicago. A joint report by these members made up the program of the meeting.

The October meeting was held on the 8th at Immanuel Hospital in Omaha. After a luncheon and business meeting a discussion of narcotic control was led by Wilma Maus.

WISCONSIN SOCIETY

Fifteen members and five guests attended the September meeting of the WISCONSIN SOCIETY OF HOSPITAL PHARMACISTS held at Mt. Sinai Hospital in Milwaukee. A lecture on "Psychosomatic Components of Anxiety Symptoms and the Role of Pharmaceuticals as Adjuncts in Their Treatment" was presented by Dr. I. I. Cash. A film showing the manufacture of pharmaceuticals was shown through the courtesy of the Upjohn Co.

Plans were made to present a summary of the Chicago Institute at a forthcoming meeting since only a few of the members of the Wisconsin Society attended the meeting.

ILLINOIS CHAPTER

The ILLINOIS CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS met at the Chicago Hospital Council on October 11. Included in the program was a discussion on "National Health Programs--Proposed Legislation" by Mr. E. E. Salisbury, Executive Director, Chicago Hospital Council.

MICHIGAN CHAPTER

The MICHIGAN CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS met on September 29 at the Wolverine Hotel in Detroit. During the business meeting, committee appointments were made and Miss Amelia Sroka was appointed secretary to replace Mrs. Elsie Jacobson who resigned. Projects outlined for the coming year included: 1. To increase the membership in the M.S.H.P., the A.S.H.P. and the A.Ph.A.; 2. To secure a permanent member of our group on the State Board of Pharmacy; 3. To arrange for one statewide meeting of Michigan Hospital Pharmacists; 4. To fulfill the Policy and Long Range Planning Committee's recommendations and commitments; and 4. To establish a permanent meeting place.

A representative of the general staff of the Narcotic Bureau was the guest speaker. He briefly reviewed the history of narcotic control and gave statistics on the use of narcotics. The lecture was followed by a discussion period.

NEW JERSEY SOCIETY

The NEW JERSEY SOCIETY OF HOSPITAL PHARMACISTS held its first fall meeting on September 22 at Rutgers University College of Pharmacy. Mr. Herbert Falk, president of the Society, welcomed the members and encouraged them to cooperate in furthering the progress of the organization.

HOSPITAL PHARMACISTS IN WASHINGTON STATE ORGANIZE

Hospital Pharmacists of the Puget Sound Area met Thursday, October 6, at Bagley Hall, University of Washington College of Pharmacy, with twenty-two being present. The meeting was called by Dr. Elmer Plein. Bart Proper of the U. S. Marine Hospital was elected President, Elida Larson of Harborview Hospital elected Vice-President, and Dr. Elmer M. Plein, Associate Professor of Pharmacy at the University of Washington College of Pharmacy, elected Secretary.

The organization will affiliate with the American Society of Hospital Pharmacists. It will also take an active part in the coming convention of the Association of Western Hospitals next April.

The By-Laws Committee will be composed of Chairman Fred E. Boehm of Tacoma General Hospital, Mary Jo Deary, and Lt. Whithouse of Madigan Hospital, all of Tacoma. The Membership Committee includes Roberta Dodds, Chairman, of Swedish Hospital, Yoko Horita of Harborview Hospital, and Mrs. Edna Hufford of the Childrens Orthopedic Hospital, all of Seattle. Mr. Melvin Scheflin, Assistant Executive Secretary of the Association of Western Hospitals, arrived from San Francisco to be guest speaker for the group. He spoke on organization procedures and the coming convention.

HOSPITAL PHARMACY SECTION OF INDIANA PHARMACEUTICAL ASSOCIATION ORGANIZED

At a recent meeting of the Hospital Pharmacy Section of the Indiana Pharmaceutical Association, the following Constitution was formulated:

1. This group shall be known as the Hospital Pharmacy Section of the Indiana Pharmaceutical Association.

2. The objectives of the Hospital Pharmacy Section shall be:
   a. To develop closer relationship between the hospital pharmacists of Indiana and the Indiana Pharmaceutical Association.
   b. To improve the status of pharmacists in the hospitals of the State.
   c. To improve and develop the effectiveness of the pharmacist in the hospital.
   d. To better pharmaceutical service in hospitals.
   e. To improve relationship between the pharmacist and other hospital personnel.
   f. To promote sound, efficient, and economical administration of the hospital pharmacy.
   g. To assist in educational programs of the hospital.

3. The officers of this Section shall consist of a chairman, a vice-chairman, a secretary, and a treasurer.

   Officers for the fiscal year 1949-1950 shall be: Chairman--Edward J. Wolfgang, Protestant Deaconess Hospital, Evansville; Vice-Chairman--Allen V. R. Beck, Indiana University Hospital, Indianapolis; Secretary--Marvin K. Schroeder, Memorial Hospital, South Bend, and Treasurer--Kenneth S. Bogart, Methodist Hospital, Indianapolis.

4. Membership shall consist of Active and Associate members.

a. An active member shall be a registered pharmacist who is actively engaged in the practice of pharmacy in a hospital and a member of the Indiana Pharmaceutical Association.
b. An associate member shall be a registered pharmacist engaged in pharmaceutical education or vitally interested in hospital pharmacy. He shall also be a member of the Indiana Pharmaceutical Association. An associate member shall not be eligible to vote or hold office in this Section.
c. All applications for membership shall be approved by the executive committee of this Section.

5. The executive committee shall consist of the elected officers of this Section. This committee is authorized to conduct business between annual meetings.

6. The annual meeting of this Section shall be held concurrently with the regular annual meeting of the Indiana Pharmaceutical Association.

7. The chairman of this Section shall appoint all committees.

8. Any revision of the constitution may be amended by a two-thirds vote of the active members.

An advisory committee including the following persons was appointed: Dean Glenn L. Jenkins, Dean E. H. Niles, Dr. H. George DeKay, J. Harold Jones, Bert R. Mull, and Henry W. Heine.

CONNECTICUT SOCIETY

The October meeting of the CONNECTICUT SOCIETY OF HOSPITAL PHARMACISTS was held at the Grace-New Haven Community Hospital on Saturday, the first, at 2:30 P.M.

The officers presiding for this year are: President - Mr. Arthur Smithwick of Middlesex Hospital; Vice-President - Mr. Thomas Heffernan of Waterbury Hospital; Secretary - Miss Shirley Bennett of Grace-New Haven Community Hospital; and Treasurer - Sister Maria Lucia of Hospital of St. Raphael.

Dr. Donald Skauen of the University of Connecticut College of Pharmacy presented a very inspiring talk on "Challenges Facing Hospital Pharmacy". Dr. Skauen opened his subject for general discussion and everyone added some interesting comments.

Mr. John J. Zugich and Mr. Francis J. Sullivan of the Grace-New Haven Community Hospital led a discussion on "Saving Nursing and Pharmacy Time in Narcotics Distribution". Various methods and forms used in other hospitals were compared and discussed.

WESTERN PENNSYLVANIA SOCIETY VOTES TO AFFILIATE

THE WESTERN PENNSYLVANIA SOCIETY OF HOSPITAL PHARMACISTS, Pittsburgh, has voted to affiliate with the national organization and has submitted a copy of the constitution and by-laws, a list of members and the names of officers to the Society's executive committee for approval. Hospital Pharmacists in this area have been organized for a number of years and many of its members have been active in the national organization. They have submitted a list of twenty-four members, all who are members of the A.Ph.A. and the A.S.H.P. We are pleased to have this group as a part of the national Society and as soon as action is taken by the executive committee, the Western Pennsylvania Society will be officially accepted as an affiliate of the A.S.H.P.

Officers of this Society for 1949 are: President Richard H. Mattern, Falk Clinic, 3601 Fifth Ave., Pittsburgh 13; Vice-President Robert A. Statler, Veterans Administration, Aspinwall, Delafield, Pittsburgh 15; Secretary Sister M. Francine, St. Francis Hospital, 45th St., Pittsburgh 1; and Treasurer Harriet B. Finney, Suburban General Hospital, 8 Jackson Avenue, Pittsburgh.

SUBSCRIPTION PRICE TO THE BULLETIN

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$4.50 per year for domestic subscriptions
$ .75 for single copies, domestic.

$5.00 per year for foreign subscriptions
$ .85 for single copies, foreign.

HOSPITAL PHARMACISTS MEET AT A.H.A. CONVENTION
Cleveland, September 27, 1949

The OHIO SOCIETY OF HOSPITAL PHARMACISTS sponsored a one-day meeting at the annual convention of the American Hospital Association meeting in Cleveland during the week of September 26. In charge of the program was Mr. William Slabodnick, chief pharmacist at Massillon City Hospital in Massillon, Ohio and president-elect of the O.S.H.P. The group was welcomed by Thomas E. Sisk, president of the Ohio Society, and chief pharmacist at St. Joseph Hospital, Lorain, Ohio.

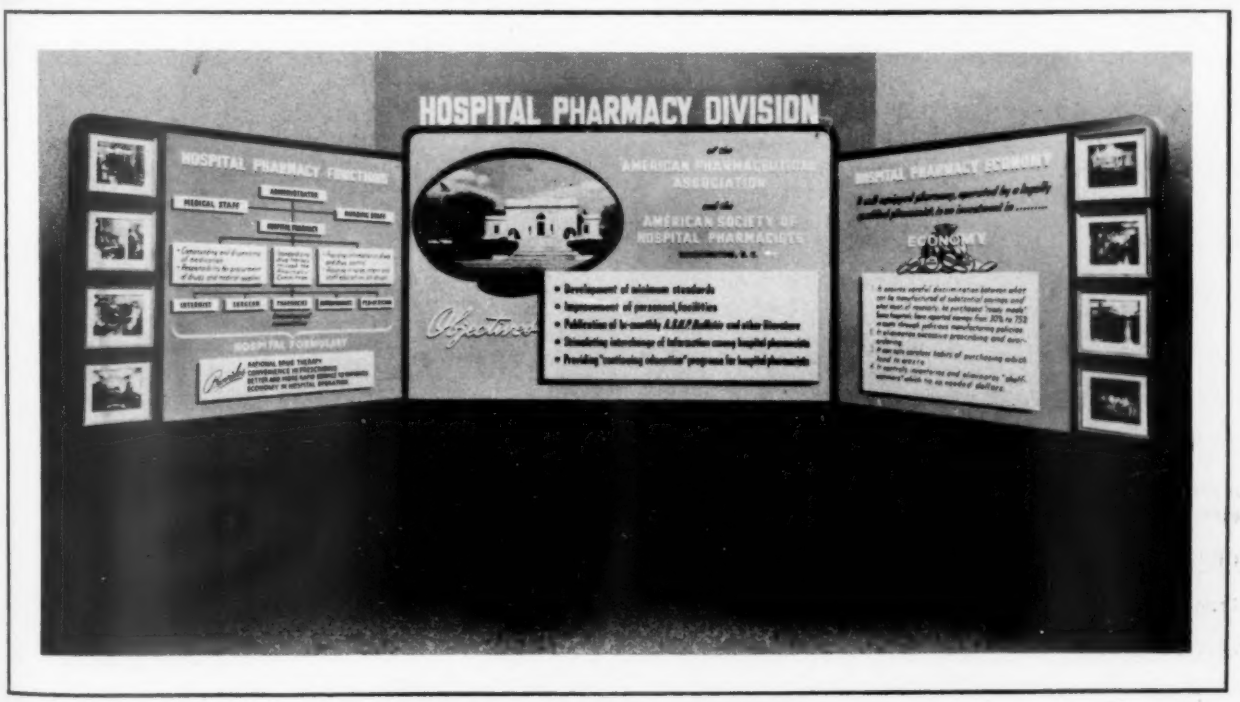
Planned chiefly from the hospital administrator's viewpoint, Dr. Robert R. Cadmus, Chairman of the A.H.A. Committee on Pharmacy, and Assistant Administrator of University Hospitals in Cleveland spoke on "The Administrator and the Hospital Pharmacist". Dr. Cadmus made two criticisms of the hospital pharmacy--poor housekeeping in the pharmacy and the occasional commercialism which creeps into the relations of the hospital pharmacist with detail men, stating that such practices are contrary to the accepted ethics of hospital management. He further laid down the following challenges to the hospital pharmacist: (1) Cutting down on cost of operation of the hospital; (2) Promoting research in various categories in the pharmacy; and (3) Education of nurses, interns and clinicians by developing and circulating bulletins from the pharmacy committee.

Dr. Cadmus' presentation was followed by a panel discussion participated in by Dr. Joseph Hayman, Professor of Medicine, School of Medicine, Western Reserve University; Mr. Ray G. Bodwell, Administrator of the Huron Road Hospital, Cleveland; and Dr. Fred Carter, Administrator, St. Luke's Hospital, Cleveland.

"New Advances in the Evaluation of Antibacterial Agents" was the subject presented by Dr. Milton J. Foter, Chief of Bacteriology Department, William S. Merrell Company, Cincinnati, Ohio.

The Ohio Society of Hospital Pharmacists was also in charge of the exhibit of the Division of Hospital Pharmacy of the A.Ph.A. and the A.S.H.P. during convention week. Mr. William Slabodnick, assisted by other hospital pharmacists were present throughout the week to answer questions posed by hospital administrators and other hospital personnel as well as pharmacists.

As the central theme, the exhibit outlined the objectives of the Division emphasizing the services of the organizations to the hospital and to the patient. Supplementing the central theme were panels outlining the functions of the hospital pharmacist with emphasis on the value of a formulary to the hospital and the economics of employing an adequately trained pharmacist in the hospital.



A.PH.A. - A.S.H.P. EXHIBIT

(Shown at Catholic Hospital Association Convention in June and at American Hospital Association in September)

NEW MEMBERS

OCTOBER 1, 1949

ARIZONA

Axelrod, David, 1702 W. Clarendon Ave., Phoenix

CALIFORNIA

Soule, H. E., Route 6, Box 636, Bakersfield

CONNECTICUT

Fenney, Nicholas William, 62 Broadfield Road, Hamden (A)
Suprenant, Henry, 92 Grnd Street, New Britain

GEORGIA

Agnew, Ruth Elizabeth, 1307½ Baker Avenue, Augusta

ILLINOIS

Datz, Charles P., 7944 S. Shore Drive, Chicago 17

INDIANA

Schmidt, A. Elsa, 1704 Michigan, Logansport
Schultheis, Joseph Leo, 653 East Florida, Evansville

MAINE

Croumey, Edward Fred, 19 Fountain, Bangor

MASSACHUSETTS

Kantrowitz, Harry O., Cushing VA Hospital, Framingham

MICHIGAN

Bersani, Camilla L., 5752 Manistiane, Detroit
Knight, Alexander G., 2282 Sturtevant, Detroit 6
McNeil, Elva Beardsley, 561 W. Iroquois Road, Pontiac (A)

NEW JERSEY

Avantario, Mildred, 521 Washington Street, Hoboken
Smith, Vivien B., 106 - Third Avenue, Newark 4

NEW MEXICO

Sister Julienne Gribben, 715 E. Grand, Albuquerque

NEW YORK

Knight, Philbrook Hodgdon, U.S. Quarantine Sta., Staten Island 5
Zeldin, Ben. 43-10 44 Street, Sunnyside. LIC 4, New York City (A)

NORTH CAROLINA

Rimmer, Albert L., 2209 Statesville Avenue, Charlotte

NORTH DAKOTA

Baker, John H., 1346 - 2nd Avenue So., Fargo

OHIO

Harris, Richard E., 61 Locust, Dayton
Trainor, Eugene R., 3738 Spencer, Norwood 12

OKLAHOMA

Jones, Marguerite Marie, 1122 S. Troost, Tulsa
Teakell, Wanda Lee. 3026 N. Harvey Parkway. Oklahoma City

OREGON

Cornes, George A., Route 1, Box 170, Nehalem
Hatch, Edwin H., Box 97, Wheeler (A)

PENNSYLVANIA

Thompson, Joseph S., R.D. #7, Butler

SOUTH CAROLINA

Byars, Perrin C., 115 S. Queen, Columbia

TEXAS

Greenlees, Albert, 3020 San Jacinto, Houston
Phillips, Gladys S., Box 231, Big Spring
Swender, Paul, 3266 Locke Lane, Houston
Waters, Betsy Smith, 4141 Glenwick Lane, Dallas

WISCONSIN

Mross, Dolores V., 3459 N. Cramer Street, Milwaukee 11
Walljasper, Aretas M., 727 Wesk Avenue So., LaCrosse

CANADA

Sister Imelda des Anges, Hopital St. Jean de Dieu, Montreal
Sister Paulin du Sacre Coeur, 4000 Blvd. Lasalle. Verdun

FOREIGN

Prado, Jorge, 4A Avenue Norte, #63, Guatemala, C. A.

MEMBERSHIP STATISTICS
October 1, 1949

Total 1949 Dues Paid	1,261
Total Delinquent Members	144
Total A.S.H.P. Membership. . . .	1,405